

TRANSIT ELEMENT



DRAFT

executive summary

introduction

background information

existing conditions

related facilities

other transportation options

analysis

characteristics of california-nevada
interstate maglev project

implementation



Adopted by
City Council X-XX-XX

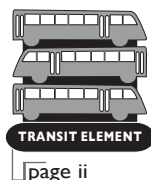
The City of Las Vegas Transit Element
of the Las Vegas 2020 Master Plan
was adopted by City Council
on XXXXX.



CITY OF LAS TRANSIT ELEMENT TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	5
Purpose	5
Enabling Legislation.....	6
Planning Context.....	6
Relationship to the Master Plan.....	8
Master Plan Goals, Objectives, and Policies.....	8
BACKGROUND INFORMATION.....	11
History of Transit in Las Vegas	10
Regional Transportation Commission of Southern Nevada	11
Organization.....	12
Funding	13
EXISTING CONDITIONS	19
Providers And Types of Transit Services	19
RELATED FACILITIES	31
South Strip Transfer Terminal.....	31
Downtown Transportation Center (DTC)	31
Maintenance Facilities.....	32
Bus Stop Amenities	33
OTHER TRANSPORTATION OPTIONS.....	35
Club Ride Commuter Service.....	35
ANALYSIS	37
Short Term Goals and Priorities	37
Long Term Goals and Priorities.....	56
CHARACTERISTICS OF CALIFORNIA-NEVADA INTERSTATE MAGLEV PROJECT ...	63
Land Use	64
Clark County's Mixed-Use Development Regulations	69
Comparison of Transit Supportive Densities	71
Comparison of Light Rail to BRT Systems	72
Amenities/Bus Stops.....	77
IMPLEMENTATION	79
Recommendation 1: Align Plans, Policies and Development Codes to Support Mass Public Transportation.....	79
Actions	80
Recommendation 2: Continued Support and Participation in Transit Project Planning Through Committee Membership	80
Actions	81





Recommendation 3: Seek Funding Opportunities to Assist with Transit and Amenity Developments within the City of Las Vegas	81
Actions	81
Recommendation 4: Coordinate Improvement of the Design, Availability, Functionality, and “Passenger of Friendliness” Bus Stop Amenities.....	82
Actions	82
Recommendation 5: Coordinate the Planning & Development of Park-and-Ride Facilities.....	83
Actions	83
CONCLUSION.....	85
REFERENCES.....	101
TABLES	
Table 1: Citizen’s Area Transit (CAT) Scheduled Frequency	23
Table 2: Bus Stop Amenity Summary.....	33
Table 3: Commuter Participation in SOV Trip Reduction Programs.....	36
Table 4: Capital Cost Estimates.....	47
Table 5: Capital Cost Estimate for Sahara Avenue Alternatives	53
Table 6: Estimated Capital Costs of Recommended Improvements.....	55
Table 7: Planned Service Characteristics for Initial Segments and Las Vegas (SRC)-Anaheim	63
Table 8: Projected Ridership, Costs, And Benefits for Initial Segments and SRC to Anaheim	64
Table 9: Mixed-Use Parking Requirements	67
Table 10: Relative Benefit/Cost Analysis of Las Vegas Transit Corridor Investment Alternatives.....	93
Table 11: Summary Characteristics of Recommended Transit Modes.....	95
Table 12: Comparison of Existing Bus Service	96
Table 13: Comparison of Enhanced Bus Service.....	97
Table 14: Comparison of Bus Rapid Transit Service.....	98
Table 15: Comparison of Light Rail Transit Service.....	99
Table 16: Comparison of Automated Guideway Transit Service.....	100
CHARTS	
Chart 1: RTC Organizational Structure.....	12
Chart 2: Mode to Work, 2000	16
Chart 3: Departure Time to Work (Morning Peak Hours).....	18
Chart 4: Departure Time to Work (All Other Departures).....	18
Chart 5: Capital Cost per Mile for Light Rail and Bus Rapid Transit	74
Chart 6: Comparison of Ridership of BRT to LRT Systems	75

FIGURES

Figures 1:	Weekday Peak-Period Congestion has Grown in Several Ways in the Past 20 Years in Our Largest Cities.....	17
Figures 2:	Sahara Avenue Conversion of Outside Shoulder to Fourth Travel Lane.....	57

MAPS

Map 1:	Citizens Area Transit System.....	22
Map 2:	Las Vegas Monorail Route.....	28
Map 3:	Proposed Location for Central City Intermodal Transportation Terminal.....	32
Map 4:	Las Vegas Downtown Planning Districts	40
Map 5:	Existing Zoning Destinations	41
Map 6:	Land Use Development/Future Projects.....	43
Map 7:	Las Vegas Resort Corridor Downtown Connector Route and Stations	45
Map 8:	Boulder Highway Bus Rapid Transit System Route.....	48
Map 9:	Sahara Avenue Dwelling Unit Density	50
Map 10:	Sahara Avenue Employment Density	51
Map 11:	Sahara Avenue LOS Peak Hour Traffic Counts.....	52
Map 12:	Potential Park-and-Ride/Pool Locations.....	60
Map 13:	Interstate Maglev Corridor.....	62
Map 14:	Clark County Mixed-Use Overly District.....	70
Map 15:	Current Densities to Support Local Bus, Intermediate Service	87
Map 16:	Densities to Support Frequent Local Bus Service.....	89
Map 17:	Densities to Support Light Rail.....	91

APPENDICES (PLEASE SEE MASTER PLAN APPENDICES BINDER)

Appendix A

Appendix B



EXECUTIVE SUMMARY

The Las Vegas 2020 Master Plan calls for regional solutions to develop a seamless Valley-wide transit system, including a high-volume, high-speed fixed guideway to connect the Downtown and major urban hubs across the Valley.

The Transit Element provides a comprehensive analysis of the transit systems and associated amenities within the city, and acts as a guide for decision makers to use when determining, prioritizing, and allocating resources for future projects.

The recommendations below are part of the strategy to meet present and future transit needs of the City's residents and visitors.

Align plans, policies and development codes to support mass public transportation.

- Ensure all local land use plans and regulations are consistent with the transit-oriented plan for the region.
- Adopt transit-oriented development (TOD) principles and design standards for planned communities to facilitate alternative transportation options.
- Require higher densities and mixed-land uses in transit corridors and other appropriate locations designed with pedestrians, bicyclists and transit in mind.
- Integrate smart growth policies to encourage efficient use of land and infrastructure supportive of compact mixed-use development forms that reduce dependency on auto travel and provide multi-modal transportation choices.
- Adopt transportation policies that elevate the priority of transit in order to promote and sustain the positive effects of a well integrated transit system on land use.
- Adopt standards and guidelines for locating and developing park-and-ride facilities and potential accessory uses.
- Coordinate planning and location of existing and future public buildings and facilities with transit.

Continue to support and participate in transit project planning through committee membership.

- Cooperate with the RTC, local entities, and private developers to improve and develop a multimodal transportation system, which includes bus rapid transit, light rail systems, the regional fixed guideway bicycle and pedestrian facilities and linkages.
- Support and promote RTC's efforts to establish a Joint Development Program (JDP) to secure the most appropriate private and/or public sector Transit Oriented Development projects.
- Support and coordinate with and local entities and private entities to facilitate the development of the maglev train system in downtown Las Vegas.

Seek funding opportunities to assist with transit system and amenity developments within the City of Las Vegas.

- Consider allocating all or a portion of the bus stop franchisee fee revenues received from the RTC for improving and enhancing transit system and amenities in the city.
- Coordinate with RTC on proposed routes and amenities for funding sources and/or funding allocation, ensuring new projects allow alternative transportation modes such as center-running bus rapid transit or light rail transit.
- Support legislative changes and funding initiatives that support transit system development within the city.
- Support funding initiatives that encourage city employees' use of transit.

Coordinate improvement of the design, availability, functionality, and "passenger friendliness" of bus stop amenities.

- Work with transit providers to improve and expand the transit route and signage program by showing connections between urban pathways, and major attractions such as schools, museums, institutions, shopping and recreation areas.
- Encourage consistency in color, logo, and the type of amenities throughout the system, thereby producing a "branded" sense of identity at bus stops and transit hubs.

- Identify and provide street furniture that enhances the experience of the riding transit.
- Re-evaluate the development review criteria for improving transit access as part of the initial construction documents to include sidewalk access, transit stop enhancements, and accessibility.
- Research and support a community based economic redevelopment effort centered on turning individual bus stops into places constructed and maintained by the community.
- Involve the local arts community and youth in the design of transit amenities.

Coordinate the planning and development of park-and-ride facilities.

- Coordinate with RTC, local entities, and developers to integrate park-and-ride spaces into proposed multiple use and transit oriented projects.
- Encourage public involvement in planning future park-and-ride locations.
- Participate in evaluating broad policy issues, formulating goals and objectives, system level measures of effectiveness, operational goals and responsibilities, and generalized location decisions regarding park-and-ride facilities.
- Support park-and-ride facilities through local funding.



INTRODUCTION

Las Vegas is one of the fastest growing cities in the nation. This remarkable growth has made it imperative that the city provide informed planning and guidance to public decision-makers to effectively plan for present and future transportation systems. An integral part of an overall transportation system plan, a comprehensive transit plan ensures that land uses, and corresponding development design and densities, support successful, high quality transportation choices.

Land use typologies and development patterns directly influence the attractiveness, efficiency, and ultimate effectiveness of mass transit systems. Conversely, the successful implementation of a forward-thinking, multi-faceted public transit system is key to successful implementation of land use plans for both redeveloping and newly developing areas of the city.

The Master Plan recognizes that regional solutions are required for the development and integration of a seamless Valley-wide transit system, including provisions for a high-volume, high-speed fixed guideway to connect the Downtown and major urban hubs across the Valley. An innovative, world-class public transit system is an essential ingredient of the city's aspiration to evolve into a world-class city. The need for efficient, effective mass transit is a continuous thread throughout various master plan elements that is tightly woven into the central theme of the Master Plan 2020 Vision: "...a high and sustainable quality of life and economy for all."

PURPOSE

The purpose of the Transit Element is twofold. First, this document is intended to address the requirements of state law, as set forth in the Nevada Revised Statutes (NRS) Sections 278.150 through 278.160; and secondly, to recommend strategies and actions to facilitate implementation of the goals, objectives, and policies contained in the Las Vegas 2020 Master Plan (Master Plan) related to transit issues.

The Transit Element is intended to accomplish the following:

- To state goals, objectives and policies to guide and influence planning and implementation of a multi-modal public transit system;
- To compile a comprehensive listing and description of transit providers and services available in the city;
- To describe the existing transit system components, routes and amenities;

- To analyze short and long term goals and priorities for transit system enhancement, including ancillary facilities and amenities;
- To describe the city's role in facilitating public transit;
- To evaluate the effectiveness and potential benefit of land use tools in transit system planning;
- To identify strategies/actions to enhance the city's role in coordinating transit system planning and implementation with the Regional Transportation Commission and other governmental entities.

The discussion in this element focuses on: existing public transit conditions; an analysis of short and long-term plans for transit system improvements; and an analysis of land use tools having potential to help transform the current bus system into a viable component of a successful multi-modal transportation system. Other system components, such as urban trails and multi-use paths for bicycles and pedestrians, along with on-street bicycle lanes, are addressed within a separate document, entitled the "Transportation Trails Element," which is incorporated into the Master Plan.

ENABLING LEGISLATION

The Nevada Revised Statutes (NRS), Sections 278.150 through 278.230, contain legislation enabling the development and adoption of a master plan. Section 278.160 lists the specific elements of a master plan that may be addressed, including a "transportation plan", and a "transit plan". According to subsection (p), a transportation plan is to show "...a comprehensive transportation system, including locations of rights-of-way, terminals, viaducts and grade separations."

In the 71st Session, June 5, 2001, the Nevada Legislature passed AB 182, which among other actions, expanded the subjects that *must* be addressed in a master plan (emphasis added). In this bill, the description of Section 278.160 subsection (q) "transit plan", was amended to include a proposed "multimodal" system of transit lines..." The full text of subsection (q) now reads: "Transit plan. Showing a proposed multimodal system of transit lines, including mass transit, streetcar, motor coach, and trolley coach lines, paths for bicycles and pedestrians, satellite parking and related facilities."

PLANNING CONTEXT

The city of Las Vegas adopted a rewritten master plan, the Las Vegas General Plan ("General Plan"), on April 1, 1992. The General Plan contains a Circulation Element in Chapter V. This chapter incorporates both the street and highways plan and



transportation plan elements referenced in the NRS. Chapter V, Section 5.2 of the General Plan addresses a “multi-modal approach to transportation planning,” stating:

A comprehensive circulation system offers several modal choices ranging from a variety of transit alternatives to pedestrian walkways. Currently, the private automobile is the preferred mode of transportation in the Las Vegas Valley. Mass transit is severely limited at best. A focus on alternatives to the automobile is needed ...

After experiencing a 73 percent increase in population during the 1990s, and having concerns about the negative impacts associated with rapid growth, the city embarked on a new two-phased Master Plan project. The Las Vegas 2020 Master Plan, adopted in September 2000, represents Phase I of the Master Plan project, forming the framework for the contents of Phase II: a series of elements; special area plans; and long-term land use designations, including a revised future land use map. Transit is among the elements identified for completion during Phase II of the Master Plan project.

The preparation and adoption of the Transit Element is an important step in achieving the city’s priority to **“Create, integrate, and manage orderly and sustainable development and growth of our community”**, as called for in the Strategic Plan.¹ Priority I. (D) of the Strategic Plan is to:

Assure multi-modal transportation options are available that connect home, workplace, commercial centers, and recreation areas in all neighborhoods throughout the Las Vegas community.

The city of Las Vegas, although not the primary public transit provider in the city, participates actively with other governmental entities in the region to address transit issues. Senate Bill 394, adopted in 1999, encourages such intergovernmental coordination and cooperation between local jurisdictions and regional entities in developing plans, including those for mass transit. The city of Las Vegas, the Regional Transportation Commission of Southern Nevada (RTC), and other city and county entities work jointly as members of several committees that have been formed to develop transportation options that will achieve the optimum use of land and public rights-of-way. One of these options is a comprehensive mass transit system. The city’s role and participation in specific transit related committees is discussed in later sections of this document.

¹ City of Las Vegas Strategic Plan Priorities, December 21, 2005

RELATIONSHIP TO LAS VEGAS 2020 MASTER PLAN

The Master Plan, adopted by the City Council on September 6, 2000, contains numerous goals, objectives, and policies pertaining directly and indirectly to public transit. In addition, various elements and plans subsequently adopted as part of Phase II of the 2020 Master Plan, such as the Conservation, Historical Preservation, Housing, Parks, Safety, Transportation Trails Elements; and the Centennial Hills Sector and Downtown Centennial Plans, contain numerous action and program recommendations related to transit.

As a component of the Master Plan, the Transit Element is intended to not only satisfy NRS requirements, but also to provide a comprehensive document that will assist with the long range planning efforts of future public transit system improvements and expansion to meet the needs of the city as it continues to grow. This element provides a baseline of detailed information that will aid in the decision-making processes that determine the city's funding priorities with respect to transit. The Transit Element links the broad policies of the Master Plan with capital improvement programming, and will assist city decision makers and relevant agencies vested with developing and operating public transit infrastructure and services.

MASTER PLAN GOALS, OBJECTIVES, AND POLICIES

REURBANIZATION

GOAL 1: The Downtown area will emerge as the preeminent hub of business, residential, government, tourism, and gaming activities in the City of Las Vegas and as a major hub of such activities in the Las Vegas Valley.

OBJECTIVE 1.6: To provide high quality transit service including integrated bus and rapid transit, which serves the Downtown and which connects the Downtown with other employment, entertainment, and shopping nodes within the Valley.

POLICY 1.6.1: That the City cooperate with the Regional Transportation Commission, other Valley entities, other levels of government and private sector investors to develop fixed guideway transit systems.

POLICY 1.6.2: That the phasing of any guideway route be prioritized to connect the Downtown and the Strip, and subsequently to connect Downtown to the McCarran International Airport, Northwest Town center and Summerlin areas.

POLICY 1.6.3: That the City support efforts to develop a maglev train system between Downtown Las Vegas and Southern California, connecting points in between to the extent feasible.

NEIGHBORHOOD REVITALIZATION

GOAL 2: Mature neighborhoods will be sustained and improved through appropriate and selective high quality redevelopment and preservation.

OBJECTIVE 2.1: To focus residential reinvestment on transitional sites within the central city area at densities that support mass transit usage.

POLICY 2.1.3: That urban hubs at the intersections of primary roads, containing a mix of residential, commercial and office uses, be supported.

NEWLY DEVELOPING AREAS

GOAL 3: Newly developing areas of the city will contain adequate educational facilities and recreational and open space and be linked to major employment centers by mass transit, including buses, and by trails.

OBJECTIVE 3.1: To ensure that new residential subdivisions, with the exception of areas currently designated as rural preservation neighborhoods by Nevada Statute, are developed into walkable communities, where reliance on auto trips for convenience shopping and access to education and recreation is minimized, and where development densities support transit.

POLICY 3.1.2: That new residential neighborhoods emphasize pedestrian linkages within the neighborhood, ready access to transit routes, linkages to schools, integration of local service commercial activities within a neighborhood center that is within walking distance of homes in the neighborhood.

OBJECTIVE 3.4: To ensure that adequate portions of the lands released for urban development by the Bureau of Land Management (BLM) are developed for recreational and educational public facilities, transit facilities and fire stations, that will benefit the city.

OBJECTIVE 3.6: To ensure that adequate amounts of park space and trail systems are designated and developed to meet or exceed national standards and standards established in the Master Plan Parks Element.

POLICY 3.6.7: That the City encourage the development of parks that link with and take advantage of trail and pedestrian/bike traffic plans.

REGIONAL COORDINATION

GOAL 7: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.3: To ensure that public safety problems are fully and adequately identified and that long term solutions are identified and implemented by the respective local government departments and agencies vested with those responsibilities.

POLICY 7.3.5: That the City work with the Regional Transportation Commission, the Nevada Department of Transportation and local governments in the Las Vegas Valley to ensure that the roadway network is planned and developed

to meet the needs of the anticipated population growth in the Valley, and provides for multi-modal transportation opportunities.

POLICY 7.3.6: That the City, in conjunction with the Regional Transportation Commission and local governments in the Las Vegas Valley, work to achieve a shift towards greater reliance on mass transit for home-to-work trips and to make transit usage a more attractive daily travel alternative. In particular, that the affected parties pursue options for a fixed guideway system where appropriate.

POLICY 7.3.7: That the City work together with the Regional Transportation Commission to identify the amount and location of lands required to address transit needs, and to acquire such lands from the federal Bureau of Land Management where appropriate.

BACKGROUND INFORMATION

HISTORY OF TRANSIT IN LAS VEGAS

Beginning operations in the early 1950s, Las Vegas Transit Systems, Inc (LVTIS), a privately owned company, provided public transit services to the city and surrounding areas for more than 40 years. The service consisted mainly of loop routes, with routes that doubled back, making sub-loops within existing loops. In 1992, by state statute, the RTC assumed responsibility for providing public mass transit for the city.

REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA

The RTC was created in 1965, and given transit authority pursuant to NRS Chapter 373 in 1979. In the 1980's, the RTC was awarded two significant and distinctive roles: 1) in 1981, the agency was designated by the state's governor as the Metropolitan Planning Organization (MPO) for the Las Vegas Urban Area; and 2) in 1983, RTC was given authority to own and operate a public mass transit system, known today as Citizens Area Transit (CAT).²

As the region's MPO, the RTC is responsible to state and federal governments for maintaining a continuous, cooperative and comprehensive (3-C) transportation planning process. In collaboration with the local participating jurisdictions, the RTC develops project priority lists for street and highway capital improvements and additions to the urban transportation system. Additionally, they secure and administer planning grants for participating local governmental entities.

The RTC officially began service on December 5, 1992 as the provider of mass public transit for the cities of Las Vegas, North Las Vegas, Henderson, Laughlin, and Mesquite, and unincorporated Clark County. The initial fleet of buses consisted of older models such as Flxible Grummans, GMC RTs, and Gillig Phantoms; however, 90 new 'New Flyer' D40 buses were purchased soon after RTC assumed responsibility for transit operations. The RTC persevered to improve public perception of the transit system, a strategy that ultimately paid off. In 1997, the American Public Transportation Association awarded CAT the highest honor of Best Transit System in America (within its

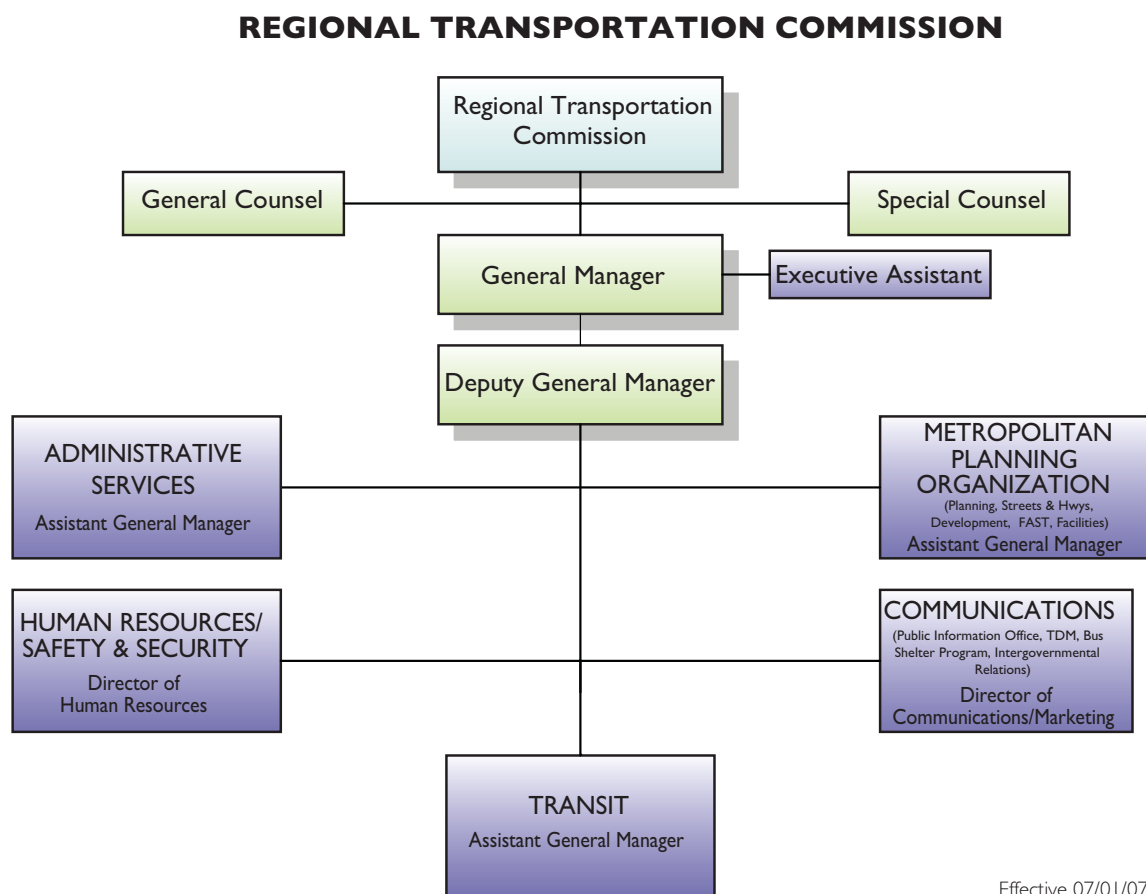
² *Regional Transportation Commission of Southern Nevada (RTC) Annual Report, 2005*

category). In 2002, CAT experienced its first strike when the Amalgamated Transit Union and RTC's fixed route contractor ATC Vancom, Inc., had opposing views on how operations should be managed. The strike resulted in service reductions to 25 percent capacity. Eventually, all parties compromised on an agreement, ending the strike and restoring transit service in the city.

ORGANIZATION

The RTC is governed by a Board of Commissioners, as prescribed by NRS 373.040, consisting of two members from the largest incorporated city (the city of Las Vegas), two members from the Board of Clark County Commissioners and one member from the city council of every other incorporated city in the county. The organizational structure of the RTC is illustrated on Chart 1, shown below. Each division within the RTC has responsibilities and performs specific functions associated with its respective area of expertise.

Chart 1: RTC Organizational Structure



Effective 07/01/07

Source: Regional Transportation Commission of Southern Nevada.

FUNDING

A major funding initiative, “the Regional Transportation Commission of Southern Nevada’s 2002 Fair Share Funding Program,” was adopted via Senate Bill (SB) 237 on June 3, 2003. The Bill anticipated generating approximately \$2.7 billion dollars over 25 years from taxes collected on development, aviation fuel, and retail sales to fund improvements to local transportation systems. Such improvements include street and highway projects; new and expanded transit; added transit service for senior citizens; and air quality improvements. Additionally, the 2002 Fair Share Program qualifies Southern Nevada to receive up to \$3 billion in additional state and federal funding for both transportation and air quality over the next ten years.³

Three funding sources currently support day-to-day transit operations: 1) fare box revenues (32%); 2) miscellaneous sources such as bus advertising and bus shelter franchise agreements (2%); and 3) sales tax revenue (66%). The Federal Transit Administration (FTA) Urbanized Area Formula Program (S.5307) provides grants for a wide variety of capital expenditures related to the development and maintenance of the public transportation system. Typically, transit agencies give priority in the use of these funds to the replacement and expansion of the bus fleet. The FTA Bus and Bus-Related Discretionary Program (S-5309) supplements formula funds for larger capital investments, such as inter-modal terminals and maintenance facilities. Federal grant and formula funds cannot be used to support on-going operation costs or administrative overhead costs, with a few exceptions.⁴

CONTINUING GROWTH OF THE LAS VEGAS METROPOLITAN AREA

The appeal of first-class gaming, proximity to natural scenic attractions, a favorable climate, and direct access by air and ground all make Las Vegas a unique place to live and visit. During the 1990’s, the urbanized areas of Las Vegas grew at an unprecedented pace. Based on future growth projections in the region, it is imperative that the city continue to coordinate with RTC and other jurisdictions to plan and develop a transit system that will serve the needs of residents and visitors, relieve congestion on the roadways, help to ameliorate air quality and energy concerns, and foster a sustainable high quality of life for all citizens.

CITY’S ROLE IN FACILITATING TRANSIT

One way the city exerts influence in transit system planning and operations is through active participation on several committees that deal with transit issues. City representatives

³ *Clark County Advisory Question 10: 2002 Fair Share Transportation Funding Program*

⁴ *Regional Transportation Plan FY 2006-2030 (RTC, October 2006)*





are members of the Southern Nevada Regional Planning Coalition (SNRPC), Regional Transportation Commission, RTC Metropolitan Planning Subcommittee, RTC Executive Advisory Committee (EAC), RTC Bus Shelter Advisory Committee, and the RTC Model Land Use Working Group, all of which are discussed in more detail below.

The SNRPC provides guidance for the local governments working together to solve regional problems. Participants include the city of Las Vegas; city of Henderson; city of North Las Vegas; city of Boulder City; Clark County; the Clark County School District; regional and state agencies and public utilities. The Coalition was created by the 1999 Nevada Legislature, and "...built on previous planning conducted by the Southern Nevada Strategic Planning Authority, which engaged thousands of citizens in identifying regional planning issues and created regional planning strategies and approaches to address anticipated growth needs."⁵ The city is responsible for ensuring its policies related to regional issues are adequately reflected in the Master Plan.

The city of Las Vegas does not directly own or operate the transit system currently servicing the city, and therefore has limited control over transit operations. Since 1992, the Regional Transportation Commission of Southern Nevada (RTC) has been the principal transit provider in the region. With two members on the RTC Board of Commissioners, the city is able to voice concerns and/or support on issues concerning new development, roadways, projects, and transit. The Nevada Department of Transportation (NDOT) participates in a non-voting capacity. All RTC meetings are public forums, and as such, must be posted and publicly advertised.

Through the Metropolitan Planning Subcommittee, city representatives assist the Executive Advisory Committee (EAC) in formulating and recommending actions to the RTC concerning transportation planning and programming issues that require analysis and investigation. The city of Las Vegas' membership on the Executive Advisory Committee (EAC) includes the Public Works Director or designee, and the Planning Director, or designee. The committee formulates and forwards recommendations to the Commission on a number of matters, including public transit.

Two city of Las Vegas representatives are members of the Bus Shelter and Bench Advisory Committee (BSBAC). This committee was recently formed pursuant to Assembly Bill 239 to discuss and make recommendations on issues relating to transit bus stop amenities, such as benches, shelters, trash receptacles, and kiosks.

5 Southern Nevada Regional Policy Plan, p 3

LAND USE

Land use and development patterns directly affect people's transportation choices. Greater distances between homes, schools, and businesses typically result in increased reliance on the automobile to get to and from work and meet daily needs. Limited choices of other modes of travel adversely affect those individuals who do not have access to an automobile, or those who cannot or do not drive. Lack of adequate consideration for short term and/or long-term provision of transportation options in newly developing areas may substantially limit opportunities to expand roads, add bus lanes, or place bus stop amenities after development occurs.

One way the city of Las Vegas works with the RTC and adjoining jurisdictions regarding land use is through the Project of Regional Significance/Environmental Impact Assessment document. According to Title 19 (Las Vegas Zoning Code) "... a project is deemed to be a 'project of significant impact' if it creates:

- a. Final maps or planned unit developments of 500 units or more
- b. Tourist accommodations of 300 units or more
- c. A commercial or industrial facility generating more than 3,000 average daily vehicle trips; or
- d. A nonresidential development encompassing more than 160 acres⁶

All projects meeting the definition of a Project of Regional Significance require an applicant to complete the assessment package. Applicants must coordinate with numerous agencies, to determine what, if any, impacts the project has on assorted factors such as transportation and traffic, schools, emergency services, housing, transit, open space and recreation, hydrology, water quality, and utilities and service systems. It is required that an applicant provide the RTC with the following transit related information: distance of the proposed development project from the nearest transit loading point; whether the project results in a change to existing mass transit route(s), the creation of a new line, or new loading points; and a brief statement indicating the anticipated effects of the project on the transit system. The RTC may also request the developer to consider mass transit when designing a project, and to include bus-turn outs, bus stop amenities, and bus travel lanes, etc. When an applicant submits an application to the city for consideration, this assessment document must be included as part of the submittal.

⁶ Title 19, Chapter 19.18

WHO THE SYSTEM SERVES

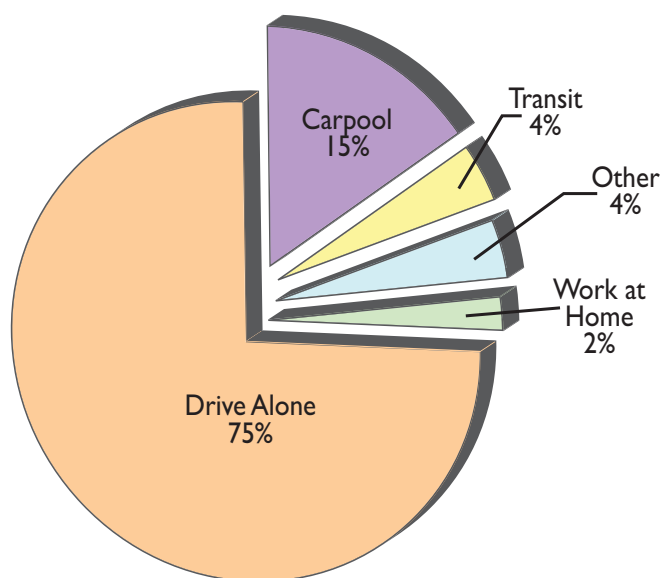
Transit systems are an essential component of modern American life. Millions of people across the country rely on dependable public transportation to get to various destinations and back home again. A variety of forms of public transit efficiently carry commuters, take a significant amount of stress off increasingly congested roadways, and help improve air quality by reducing mobile air emissions. As energy prices continue to escalate, it is possible that more people will be attracted to transit as an affordable transportation option.

As Las Vegas' population and visitor volume continue to expand, the RTC is faced with enormous challenges to keep pace with the growing demand for viable transportation options. Many businesses in the city are open 24-hours a day, seven days a week, resulting in high expectations for continuous public transportation availability to accommodate employees, other local residents and visitors. The RTC continually seeks innovative ways to offer attractive transportation options to entice commuters and visitors to use mass transit services.

MODE CHOICES AND TRAVEL TIMES

As the population within the Las Vegas Valley has grown, so has the number of vehicles on the roadways serving the region. In 2000, the U.S. Department of Transportation, Federal Highway Administration (FHWA) assessed the different modes of transportation people use within Las Vegas to get to work, as illustrated in Chart 2. The findings of this assessment are consistent with the city's 1992 General Plan, which states "...the private automobile is the preferred mode of transportation in the Las Vegas Valley..."⁷ As shown, in Chart 2, 75% of those traveling to work in Las Vegas in 2000 drove alone, while only 4% chose to use transit.

Chart 2: Mode to Work, 2000

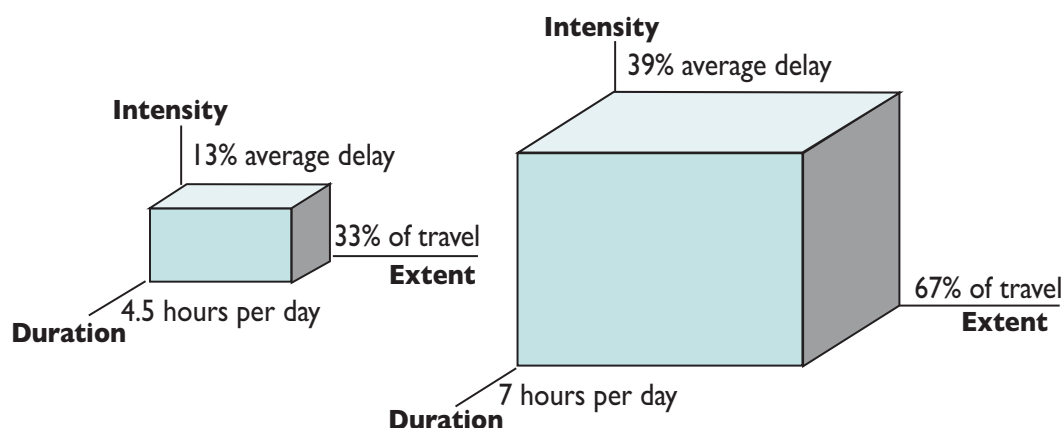


Source: US Department of Transportation, FHWA

⁷ *Las Vegas General Plan, Chapter V, Section 5.2, 1992.*

The FHWA Office of Operations conducted a national study regarding the impacts of congestion on commuter travel times within large cities. This study revealed that in the year 2001, “the average weekday peak-period trip took almost 40 percent longer than the same trip in the middle of the day, compared to 13 percent longer in 1982. Sixty-seven percent of the peak-period travel was congested compared to 33 percent in 1982. Travelers in 75 urban areas spent 3.5 billion hours stuck in traffic in 2001; up from 0.72 billion in 1982.”⁸ Essentially, traffic congestion in larger cities within the U.S. has affected both peak-periods as well as non-peak travel times (see Figure 1 below).

Figure 1: Weekday Peak-Period Congestion Has Grown in Several Ways in the Past 20 Years in Our Largest Cities

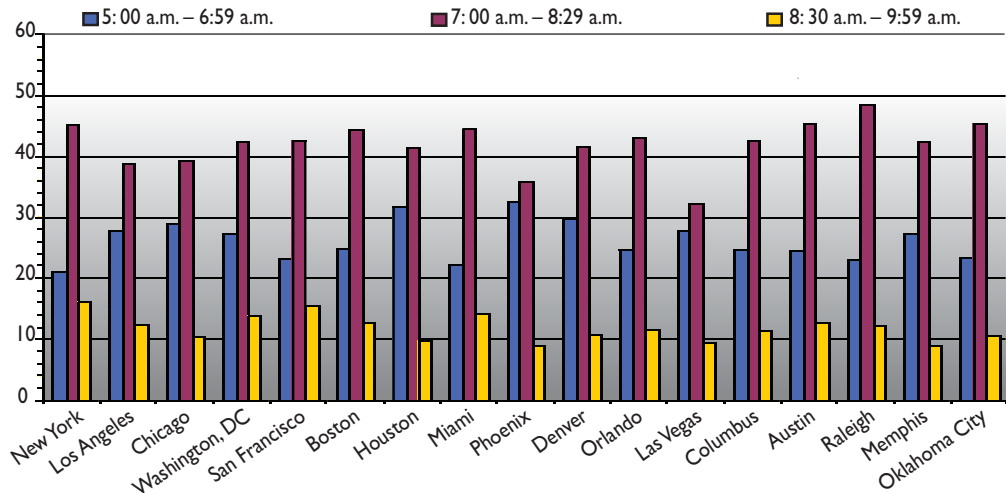


Source: Analysis of data used in 2003 Annual Urban Mobility Report, Texas Transportation Institute.

A typical work schedule in major metropolitan areas within the United States is Monday through Friday from nine to five. The majority of commuters nationwide traveled to work between 7:00 and 8:29 a.m. as illustrated in Chart 3. Las Vegas stands out as an anomaly, having the lowest proportion of workers traveling to work between these hours, as compared to the other metropolitan areas studied.

⁸ *Traffic Congestion and Reliability: Linking Solutions to Problems (U.S. Department of Transportation-Federal Highway Administration, November 10, 2005)*

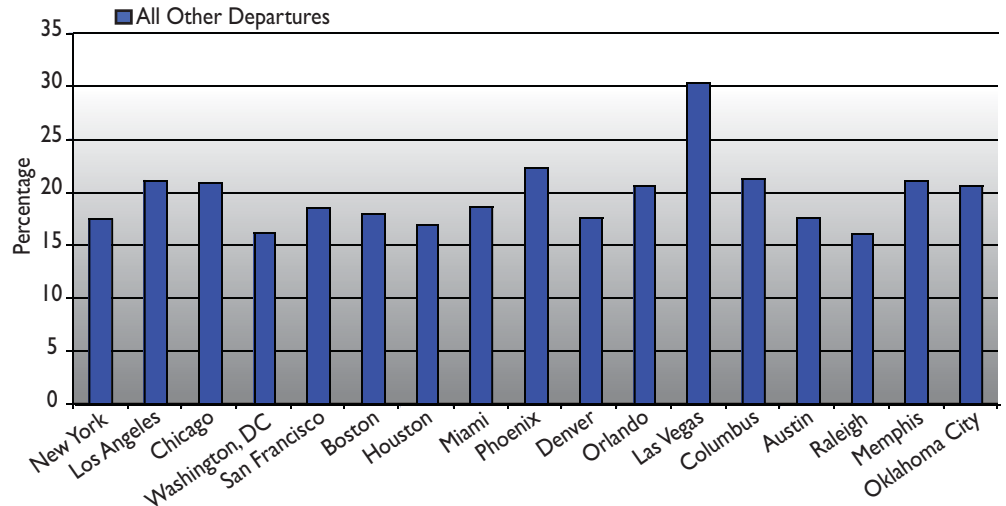
Chart 3: Departure Time to Work (Morning Peak Hours)



Source: US Department of Transportation; Federal Highway Administration, Office of Planning

The explanation for the Las Vegas anomaly is that workers have staggered commute times related to varying work shifts tied to the 24-hour operations of the gaming, entertainment, and service based industries. As illustrated in Chart 4, out of 49-major Metropolitan Statistical Areas (MSA), Las Vegas had the highest proportion of workers departing at times later than 9:59 a.m., at over 30 percent.⁹

Chart 4: Departure Time to Work (All Other Departures)



Source: US Department of Transportation; Federal Highway Administration, Office of Planning



⁹ *Journey to Work Trends in the United States and its Metropolitan Areas 1960-2000* (US Department of Transportation; Federal Highway Administration, Office of Planning)

EXISTING CONDITIONS

PROVIDERS AND TYPES OF TRANSIT SERVICES

The RTC is the primary provider of transit services for the Las Vegas Metropolitan area. Various bus services, such as Citizens Area Transit (CAT), the Metropolitan Area Express (MAX), The Deuce, CAT ADA Paratransit, CATSTAR, and Silver Star, comprise the system managed by RTC to provide customers with transportation options. Currently, the RTC has two separate contractors: 1) Veolia Transportation, which operates the CAT fixed route, MAX, and The Deuce services; and 2) Laidlaw Transit Services Inc., which operates primarily CAT ADA Paratransit services. Fixed route and Paratransit services outside the urbanized areas are operated by the Southern Nevada Transit Coalition (SNTC), a non-profit organization. Details of the services provided within the Las Vegas Metropolitan area are discussed below.

■ The Citizens Area Transit (CAT) Bus Service

The CAT bus system is the fixed route public mass transportation system for the Las Vegas Valley. It encompasses a network of 35 regular CAT routes, one (1) MAX route, and three (3) DEUCE routes, supplemented by 12 neighborhood routes that cater to the needs of senior citizens. Of the 35 routes, fourteen provide 24-hour service, while the remaining routes operate on a 17 to 21-hour day, seven days a week schedule. In 2006, the system carried over 61 million passengers with ridership increasing 9.8 percent from the previous year. The system fleet currently consists of 345 buses; 10 MAX rubber tired fixed guideway transit vehicles; 48 DEUCE double-deck buses; and 171 Paratransit vehicles. All fixed route and Paratransit vehicles meet the Americans with Disabilities Act (ADA) accessibility standards.¹⁰

As described by RTC, the CAT bus system "...operates on a basic grid pattern of the major streets in the valley, overlaid with service on radial routes such as Las Vegas Boulevard, Boulder Highway, and Rancho Drive. Routes into and across downtown Las Vegas focus on the Downtown Transportation Center (DTC). A secondary hub serving the southern part of the valley is located at the South Strip Transfer Terminal (SSTT)." Map 1 displays the current CAT bus system, while Table 1 lists the available services by peak-hour frequency.

CAT buses offer an additional option for the bicyclist: all fixed route buses are equipped with bicycle racks fastened to the front of the transit vehicles. The racks can accommodate

¹⁰ Regional Transportation Commission of Southern Nevada (RTC) website, 2007



Citizens Area Transit (CAT)



Metropolitan Area Express (MAX)

two to three bicycles at a time, making it convenient for cyclists to secure their bikes and ride the rest of the way to work/home in comfort by using transit. The RTC estimates that 64 percent of persons using the bike racks are commuting to and from work.¹¹

■ RTC Metropolitan Area Express (MAX) Service

Initiated in June of 2004, the Metropolitan Area Express (MAX) is the first of its kind in the region. A hybrid between bus and rail systems, MAX has many features of rail service with the cost and flexibility of a bus: it is rubber tired, and operates on a bus-only curbside lane. MAX service differs from standard CAT bus service, in that it provides enhanced amenities, including off-board fare collection, on-board security, upgraded shelters, and level platform boarding. Level boarding is an important feature since the system carries a large number of wheelchair passengers, and accommodates cyclists by enabling them to load bicycles directly onboard the vehicle.

MAX currently operates along Las Vegas Boulevard North between the DTC and Nellis Air Force Base. Vehicles are scheduled every 12 minutes between 5:00 a.m. to 7:00 p.m.; every 17 minutes between 7:00 p.m. and 9:00 p.m.; then every 20 minutes until 10:00 p.m. In 2006, ridership on the MAX was 2,353,220, up approximately 11.7 percent from the previous year.¹²

■ RTC Deuce Service on the Resort Corridor

The Las Vegas Resort Corridor, or “Strip,” poses unique transit challenges requiring innovative and creative thinking. One solution was growing taller instead of longer, as evidenced by the successful debut of RTC’s newest addition, “The Deuce.” The Deuce is a 97-passenger, 14-foot high double deck transit vehicle servicing the Las Vegas Resort Corridor since October of 2005. With outstanding views of the Strip from the upper deck, and plenty of comfortable seats, The Deuce carried more than 257,000 passengers during its first week of service.



The Deuce passenger, double deck transit vehicle.

The Deuce is the core route of RTC’s transit system, centering on Las Vegas Boulevard and running southward six miles from Downtown Las Vegas to Russell Road. The route begins at the DTC and continues to the South Strip Transfer Terminal (SSTT), just south of McCarran International Airport. Three other routes connect the DTC with the Resort Corridor, and also serve the airport. Additionally, the Resort Corridor is crossed by six east-west CAT bus routes, along with service provided by the Monorail and several people-mover systems operated by major resorts.

¹¹ Ibid

¹² Ibid

By the end of 2006, The Deuce's ridership was an impressive 10,838,863, or 903,238 passengers per month. Transit service on the Strip has always more than paid for itself. The RTC anticipates The Deuce will generate enough revenue to help pay for other residential services and programs.¹³

■ RTC CAT ADA Paratransit Service

Paratransit service is federally mandated for transit agencies that operate fixed route systems. The RTC first began providing ADA Paratransit service in 1994, two years after starting their fixed route bus service. The Americans with Disabilities Act of 1990 established the principle that persons with disabilities have the same rights as other citizens regarding access to services and facilities. The RTC's CAT ADA Paratransit service complements their fixed route system by improving mobility and accessibility to the disabled community.

CAT ADA Paratransit Service is a shared-ride, door-to-door program, available to individuals who are functionally unable to independently use the CAT fixed route system, either all of the time, temporarily, or under certain circumstances. It is available to individuals who meet disability eligibility through a personal functional assessment. The RTC contracts with Laidlaw Transit Services, which operates the service using 189 vehicles owned by RTC. The RTC owned buses consists of 51 Supreme Ambassador 26-foot CNG buses, 123 Eldorado Aerotech Cutaway Diesel buses, and 15 Starcraft All Star Cutaway Diesel buses. Service is provided within the urbanized area of the Las Vegas Valley, including Boulder City, 365-days a year, 24-hours per day.

In 2006, CAT ADA Paratransit served approximately 56,766 passengers per month, with a total Paratransit ridership of 681,193, an increase of 12.3 percent over the previous year. The number of certified clients is approximately 9,307, with 1,028 using the system more than 20 rides per user per month. The annual service miles in 2006 totaled approximately 5,919,819.¹⁴

¹³ *Ibid*

¹⁴ *Ibid*

Map I: Citizens Area Transit System



Source: Regional Transportation Commission website, October 2007
For a current map, contact the Regional Transportation Commission.

Table I: Citizen's Area Transit (CAT) Scheduled Frequency

Use this table for an at-a-glance look at how often each route runs. All frequencies listed apply to **peak service** (the busiest time of the system, generally, 6 a.m. to 6 p.m.). For more specific information, including actual arrival and departure times, see the individual route schedule pages.

ROUTE	Minutes Between Vehicles		
	Weekdays	Saturdays	Sundays & Holidays
101 – Rainbow	30	30	30
102 – Jones	30	30	30
103 – Decatur	23	25	30
104 – Valley View / Torrey Pines	35 / 40 / 45	60 / 50	60 / 50
105 – Martin L. King / Kova	30	30	30
106 – Rancho / Centennial Hills	30	30	30
106A – Rancho / Centennial Hills (Counterclockwise)	60	60	60
106B – Rancho / Centennial Hills (Clockwise)	60	60	60
107 – Boulder Hwy.	20	20	20
108 – Paradise / Fremont St. Experience / Monorail Connector	20	20	20
109 – Maryland Pkwy.	15 / 12	15 / 12	15
110 – Eastern Avenue	20	20	30
111 – Pecos / Green Valley Pkwy.	20 / 30	30	30
111A – Pecos	40 / 60	60	60
111B – Pecos / Green Valley Pkwy.	40 / 60	60	60
113 – Las Vegas Blvd. North	35	35	35
114 – Mountain Vista / Green Valley	60	60	60
115 – Nellis / Stephanie	30	30	30
115A – Nellis / Stephanie	60	60	60
115B – Nellis	60	60	60
117 – Las Vegas Blvd. South / Silverado Ranch	30	35	35
201 – Tropicana	15	20 / 15	20 / 18
202 – Flamingo	15 / 12	18 / 15	20 / 15
203 – Spring Mountain / Twain	30	30	30
204 – Sahara	17 / 18	20	20
206 – Charleston	15	20	20
207 – Alta / Stewart	60	60	60
208 – Washington	30	30	30
209 – Vegas / Owens	45*	60	60
210 – Lake Mead Blvd.	24	30	30

Table continued on following page

Table I: Transit Frequency Table, continued

ROUTE	Minutes Between Vehicles		
	Weekdays	Saturdays	Sundays & Holidays
211 – Smoke Ranch / Carey	60	60	60
212 – Sunset Road 30	30	60	60
213 – Desert Inn / Lamb	30	30	30
214 – H Street / D Street	60	60	60
215 – Bonanza	30	30	30
217 – Warm Springs / Downtown Henderson	60	60	60
218 – Cheyenne	45	60	60
219 – Craig	30	30	60
402 – Crosstown Connector / Boulder City	60	60	60
403 – North Las Vegas Connector	30	30	30
403A – Rancho / Simmons	60	60	60
403B – Rancho / Losee	60	60	60
THE DEUCE – Strip Transit	8 / 7	8 / 7	8 / 7
MAX – Las Vegas Blvd. North	12	12	12

*Route 209 operates at 45-minute frequencies between approximately 12:30 p.m. and 6:30 p.m.

Note: minutes indicated with two numbers (i.e. 20/30) means frequency during peak and non-peak hours

Source: Regional Transportation Commission, October 2007

All frequencies listed apply to peak service (the busiest time of the system, generally, 6 a.m. to 6 p.m.). For specific information regarding routes or schedules, contact the RTC.

Paratransit has proven to be a reliable and useful service to the disabled community. However, the cost of providing this service to the growing number of senior residents within the Las Vegas Valley has grown significantly beyond expectations. The average cost of a one-way ride per client for Paratransit service is approximately \$41.72, compared to \$1.90 for a one-way ride on fixed route service. The RTC has implemented several specialized services as described below to address this problem.

▪ CATSTAR Non-ADA Service

CATSTAR Non-ADA service is a subscription-based system for disabled and non-disabled individuals participating in sheltered workshop programs for persons with disabilities. This service is organized directly with the agency. In 2006, CATSTAR ridership was estimated at 152,764 annually.

An advantage to offering this type of program is the cost reduction in comparison to ADA Paratransit service. The RTC



estimates the cost of a one-way trip using CATSTAR at \$16.78, compared to \$41.72 for ADA Paratransit service. Another advantage of CATSTAR service is RTC's ability to maximize the number of riders on a single vehicle going to the same destination. This frees valuable resources, enabling RTC to expand services and offer other transit options and programs.¹⁵

- **Silver STAR**

Responding to significant increases in the senior citizen population within the Las Vegas Valley, RTC explored alternative transportation options to meet seniors' transportation needs, while offsetting the soaring costs of CAT ADA Paratransit service. Silver STAR, a senior transportation service, is a compromise between CAT's fixed route and ADA Paratransit services. The routes are designed with input from senior citizens living in a particular community, providing access to senior housing, shopping centers, medical facilities, and recreational services.

Unlike fixed route and ADA Paratransit service, Silver STAR service is available only during limited hours and days of the week, and does not operate on holidays. The service is a continuous one-way loop-route, and connects with regular CAT Fixed Route service. There are currently ten Silver STAR routes located throughout the Las Vegas Valley, with total ridership exceeding 28,500 riders annually.

- **Flexible Demand Response Specialized Transportation (FDR)**

Flexible Demand Response (FDR) bus service began in August 2004. It is a curb-to-curb, advanced reservation transit service provided by the RTC to age restricted communities. It is currently available to residents within the Sun City Anthem and Sun City Summerlin Communities, and in Boulder City. Though it targets senior citizens, anyone who registers for the program and receives an identification card is entitled to use the service. Rides can be reserved up to three days in advance on FDR, which operates three days a week on a limited schedule, costs only 50 cents, and connects to CAT fixed route services throughout the area. Since its inception, ridership has grown to around 3,700 passengers annually.¹⁶

CITY RIDE BUS SERVICE

The City of Las Vegas' Department of Field Operations manages the "City Ride" bus service. Beginning June 27, 1987, the city of Las Vegas began offering limited transit service in the Downtown corridor using trolley-type vehicles. Today, City

¹⁵ Ibid

¹⁶ Ibid

Ride operates six (6) compressed natural gas (CNG) 26-passenger buses for the Downtown and Senior Neighborhood routes, and three (3) 17-passenger cutaway shuttle buses for the Outlet Mall Express route.

The Downtown and Senior Neighborhood routes average approximately 30,000 riders per month or 360,000 riders annually. The Outlet Mall Express, which began operating in August of 2003, now averages approximately 9,000 riders per month or 108,000 riders annually. City Ride bus service operates seven days week, with different schedules and frequencies, depending on the particular route.

LAS VEGAS MONORAIL SERVICE

In 1997, state legislation approved a private monorail company to own, operate, and charge a fare as a public monorail system. The Las Vegas Monorail Company, a nonprofit organization, acquired the original monorail system in 2000. It is privately funded and operated by hotels; no tax dollars were used for its construction or operation. Their Board of Directors includes five members appointed by the Governor of Nevada. The Las Vegas Monorail is the first and only privately owned monorail system providing service to the general public in the United States.

The Monorail generates revenue from ticket sales and advertising. "Branding rights" for the seven stations and nine trains are available, with sponsorship in the millions of dollars. The income received from sales of branding rights for the stations and trains helps to offset revenue from passenger fares.¹⁷



Las Vegas Monorail

On February 6, 2002, the Las Vegas City Council adopted Bill 2002-9, Ordinance 5432, establishing a monorail master business license for monorails built in the city of Las Vegas. Additionally, on May 1, 2002, Bill 2002-56, Ordinance 5478 was adopted amending Title 19 to allow monorail systems by means of a special use permit in all land use zoning categories within the city's jurisdiction.

The first phase of the Las Vegas Monorail system includes seven stations along its four-mile route servicing eight major resorts, linking more than 25,000 hotel rooms and approximately 4.4 million square feet of meeting and convention space, including the Las Vegas Convention Center. The service currently extends from the MGM Grand Station to the Sahara Hotel and Casino in the Resort Corridor (See Map 2). Trains arrive every 4-12 minutes, and during peak hours arrive every 4-6 minutes. The Las Vegas Monorail operates 365-days a year, with week-day service from 7:00 a.m. to 2:00 a.m, and until 3:00 a.m. Friday through Sunday. Passenger station amenities include ac-

¹⁷ Las Vegas Monorail website, 2007 (www.lvmonorail.com)

cessible elevator service; level boarding from platforms to trains; ticket vending machines; security officers for safety and passenger assistance; and shaded waiting areas. Passenger ridership is nearly 32,000 riders per day or 11,680,000 annually.¹⁸

An originally proposed 2.3 mile (3.7 km) extension of the monorail to Downtown Las Vegas was planned to begin construction in 2005, with service to start in 2008. New stations were to be provided at the Stratosphere Hotel/Northern Strip, Arts District/Charleston Boulevard, Office District/Downtown Intermodal Terminal, and Fremont Street Experience. However, due to several major system malfunctions in the first phase of the project that delayed passenger service for almost a year, and income falling below projected levels, on January 27, 2005, the federal government announced their withdrawal of federal funding for the project. On January 3, 2007, the city of Las Vegas adopted a General Plan Amendment to the Downtown Centennial Plan reserving the right-of-way for the proposed expansion should the funding become available.

On December 7, 2006, the Clark County Board of Commissioners granted the Las Vegas Monorail Company a 75-year Franchise Agreement and Land Use Permit to extend the Monorail to McCarran International Airport. An investment grade ridership study focusing on potential ridership and preliminary engineering plans is currently underway and is expected to be completed in late 2007.¹⁹ Funding for the project has not yet been identified. The anticipated routing is:

- Monorail terminus at McCarran Airport-Terminal 3 with the first stop near Airport Terminal 1
- North on Swenson stopping at the Thomas & Mack Center at University of Nevada, Las Vegas (UNLV)
- Continue up Swenson and east on Harmon stopping at Hard Rock Hotel and Casino
- South on Koval, turning east on Tropicana to intersect with the existing system at the MGM Grand

BELL TRANS

In 1989, Bell Trans, a privately owned company, began offering San-Francisco-style trolley service along a 4-mile stretch of South Las Vegas Boulevard, a small segment of which is located north of Sahara Avenue within the city of Las Vegas' jurisdiction. The Trolley service offered an attractive transit option to residents and visitors by making convenient stops and pickups at the hotels instead of on the street. In early 2006, the Trolley service was extended to the downtown area, known formerly as "Glitter Gulch," home of long-established casinos. New stops were added at the Las Vegas Premium Outlets, World Market Center, Plaza Hotel and Casino, Golden Nugget, Las Vegas Fremont Hotel and Casino, Neonopolis, along

¹⁸ Ibid

¹⁹ Ibid

Map 2: Las Vegas Monorail Route



Source: Transportation: Las Vegas Monorail (Vegas.com website, 2007)

with three additional stops at the Fremont Street Experience, elevating public transit to a level of service not formerly available in the city.²⁰ The service consists of four (4) loop routes: "Downtown Loop," "Strip Loop I-15," "East Loop," and "South Loop," each focusing in on a specific section of the city. The trolley operates seven days a week with pick-ups every 15-30 minutes.²¹

NON-PROFIT AND FOR-PROFIT PARATRANSIT SERVICE PROVIDERS

In addition to the above mentioned public transportation services, senior and disabled individuals have additional non-profit and for-profit Paratransit and ride service options available. In areas not serviced by CAT ADA Paratransit, local communities have organized assorted forms of service for the elderly. To qualify for these services, an individual must be age 50 or above. These services are available to eligible persons free of charge.

Helping Hands, Nevada H.A.N.D., Sun City Summerlin Charities, Lend a Hand, Catholic Charities, Lutheran Social Services and Nevada Association of Latin Americans are all non-profit organizations that provide transportation and other care to the elderly and chronically ill throughout the Las Vegas Valley. The services offered by these organizations provide respite services for primary care givers, as well as support peoples' ability to maintain their independence. Donations are welcome and accepted.



²⁰ *Las Vegas Strip Trolley Extends Route Downtown (Las Vegas Insider, 2007)*

²¹ *Las Vegas Strip Trolley, 2005*



RELATED FACILITIES

SOUTH STRIP TRANSFER TERMINAL

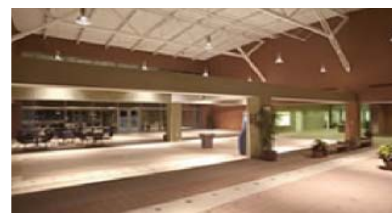
The RTC's newest facility, the South Strip Transfer Terminal (SSTT), opened in June of 2003. Located just south of McCarran International Airport, east of Las Vegas Boulevard, the terminal area includes 14,929 square feet on 6.87 acres of land, including a 2.08-acre joint development parcel. Capable of accommodating more than 385 bus departures and up to 20,000 daily passengers within the next 20 years, it is currently equipped with 18 bus bays, a driver's lounge, operations area, office space, and a probing station where staff accesses information from fare boxes while securing the fare box revenues into a vaulted area.

Used as a stop-over point for several bus routes, the SSTT offers passenger amenities such as a climate controlled waiting area, restrooms, customer service counter, lost and found office, a gaming area, two concession areas, onsite security, a park & ride lot with over 200 spaces, kiss & ride lot that allows commuters to drop off passengers to access the facility, and convenient transfers to seven transit routes.²²

DOWNTOWN TRANSPORTATION CENTER (DTC)

Owned and maintained by the City of Las Vegas, the Downtown Transportation Center (DTC) was originally built in 1987, renovated and expanded in 1999. It is the major transit hub for the Las Vegas Valley and is the main transfer point for many CAT routes, along with all of the city's City Ride bus routes. The DTC has 32 bus bays, a fare retrieval and vault area. The terminal area is 10,000 square feet, including customer amenities such as restrooms, a driver's lounge, ticket booth, security for customer safety and assistance, and customer service area where representatives are available to answer questions about routes, schedules, purchasing bus passes, and processing applications for CAT reduced fare photo identification cards.

The RTC, in conjunction with the Federal Transit Administration (FTA), is proposing to construct a new terminal, the Central City Intermodal Transportation Terminal (CCITT) in the downtown area to replace the DTC, which has been operating at full capacity for a number of years. The new terminal would be located in downtown Las Vegas on approximately



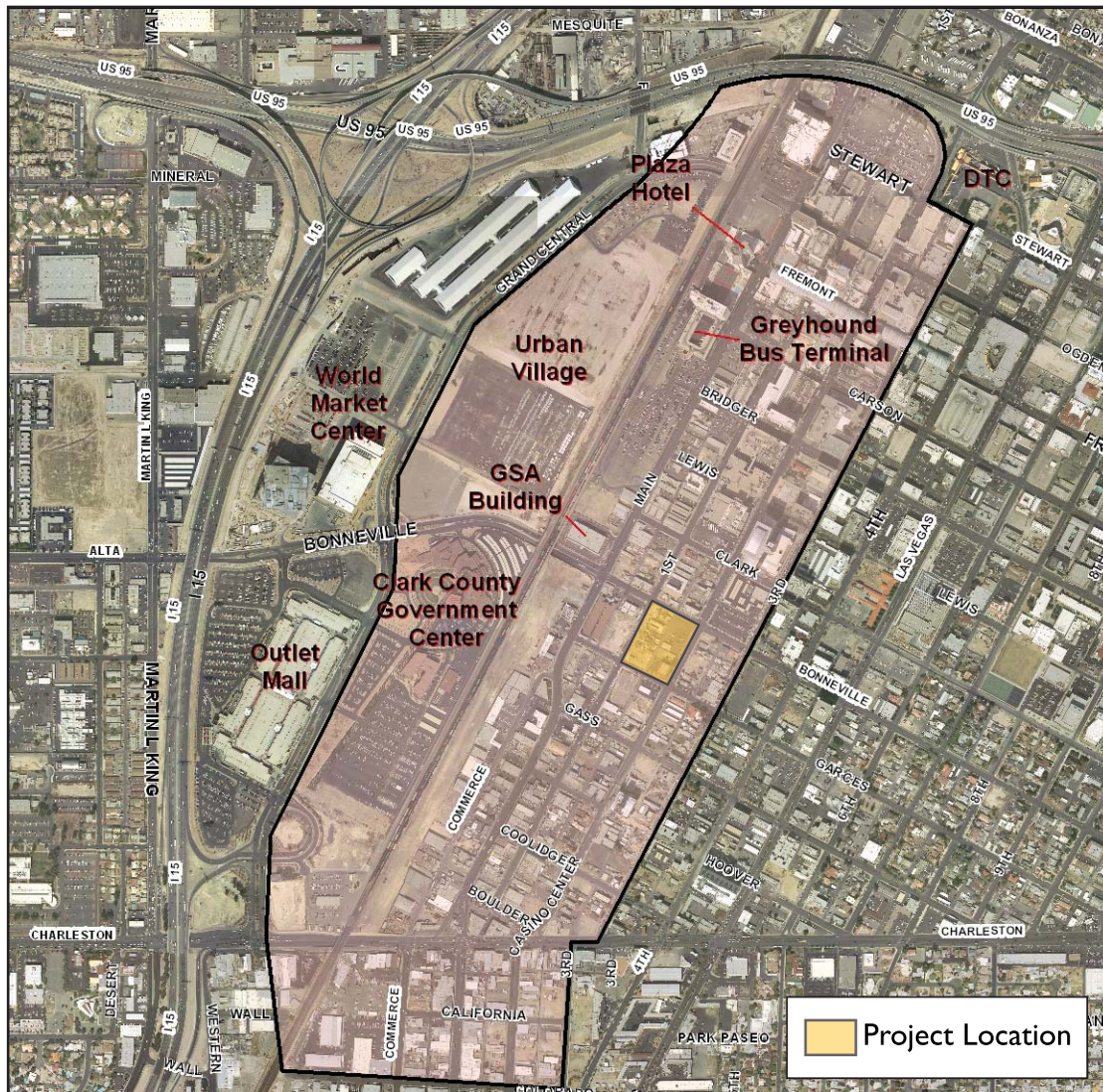
South Strip Transfer Terminal



Downtown Transportation Center

²² South Strip transfer Terminal (RTC, 2007)

Map 3: Proposed Location for Central City Intermodal Transportation Terminal



Note: Urban Village is now Union Plaza

Source: Central City Intermodal Transportation Terminal (CCITT) Draft Environmental Assessment, August 15, 2006

3 to 4 acres of land, in a study area bounded by Casino Center, Bonneville, Garces, and First Street (see Map 3). RTC anticipates having amenities similar to the DTC with security provided by a private company. The CCITT would satisfy the needs of expanding transit services, while accommodating the city's plan to develop an entertainment complex and museum adjacent to City Hall on the DTC site and adjoining land.²³

MAINTENANCE FACILITIES

Presently, the RTC operates two maintenance facilities: the Integrated Bus Maintenance Facility (IBMF), located in North Las Vegas, which is owned by RTC, and the Tompkins Maintenance Facility, located in the southwest portion of the valley, which is leased from a private owner.

²³ Central City Intermodal Transportation Terminal (CCITT) Draft Environmental Assessment, August 15, 2006

BUS STOP AMENITIES

Originally, the city outsourced the construction, installation, and maintenance of bus stop amenities to two separate companies: Outdoor Promotions Inc., and Viacom Outdoor. On June 17, 2005, Assembly Bill 239 of the NRS, Chapter 373 re-directed this responsibility from the various jurisdictions to the RTC. In early 2006, the city's existing agreements with Outdoor Promotions, Inc. and Viacom Outdoor were transferred to RTC. In order to consolidate all the jurisdictions' contracts into one, thereby eliminating conflicting requirements, and ultimately improving the overall program, RTC issued a limited bidding procurement to the existing contractors. A new consolidated service contract was subsequently awarded to Outdoor Promotions, to provide bus stop amenity services for the cities of Las Vegas, North Las Vegas, and Henderson, and Clark County. A draft agreement is currently under review by both parties.

Out of approximately 1,306 bus stops in the city of Las Vegas' jurisdiction, 920 have some type of bench and/or shelter, while 386 stops have no amenities. This equates to approximately 70.4 percent of the stops having some type of amenity (see Table 2).

Table 2: Bus Stop Amenity Summary

Entity	Number Of Active Stops	Number Of Stops With Sign Only	Number Of Stops With Bench Only	Number Of Stops With Shelter Only	Number Of Stops With Bench & Shelter	Number Of Inactive Stops
Las Vegas	1306	386	392	16	512	62
Clark County	1468	722	169	9	568	91
North Las Vegas	411	184	61	4	162	7
Henderson	345	207	9	3	126	100
Boulder City	17	8	5	0	4	1
Mesquite	62	54	8	0	0	3
RTC	3	3	0	0	0	0
Private	96	89	6	0	1	20
TOTAL	3708	1653	650	32	1373	284

Source: Regional Transportation Commission of Southern Nevada





OTHER TRANSPORTATION OPTIONS

CLUB RIDE COMMUTER SERVICE

RTC's Club Ride Commuter Service is a trip reduction program that assists customers in finding ways to go to and from work safely and more economically. It includes a computerized ride matching system and an incentive plan that rewards participants. The program goals are to help reduce the number of Single Occupant Vehicles (SOVs) on the roads during peak hours, thereby helping to reduce air pollution and assist in fostering new commuter behavior in Southern Nevada.

In order to reduce the number of SOVs, RTC encourages commuters to use transit, carpools, and vanpools, to bike, and walk. Club Ride incentives include:

- Computerized Rideshare Matching
- Flexi Fare Incentive Program
- Vanpool Incentive Program
- Transportation Coordinator Training
- Transportation Coordinator Network of Southern Nevada
- Monthly and Quarterly Prize Drawings
- Quarterly Program Component Events
- Emergency Rides Home
- Best Workplaces for Commuters designation through the Environmental Protection Agency (EPA)²⁴

Employer-based Club Ride Programs are the key focus of the entire program. RTC coordinates with employer work sites to enhance their ability to provide standardized program elements throughout the valley, and to offer particular emphases tailored to the needs of the employer. Every work site is provided the same program, events, and incentives, but programs may differ to meet an employer's particular needs. For example, one work site may need to initiate a parking reduction initiative, while another may prefer to focus on employee morale.

Commuter participation through employer-based Club Ride programs has shown a steady increase since the program's inception in 1999. As indicated in Table 3, almost 95 percent of all rideshare registrants were from worksites.

²⁴ *Regional Transportation Plan FY 2006-2030*

Table 3: Commuter Participation in SOV Trip Reduction Programs

Participant Type	Year						
	1999	2000	2001	2002	2003	2004	2005
Total Registrants	500	2,767	4,111	4,982	7,509	10,392	13,806
Employer-Based Registrants	337	1,900	3,208	3,906	6,348	8,581	12,904
Percent Employer-Based	67%	69%	78%	78%	85%	83%	94%
Worksites	50	99	119	141	181	224	233
Registrants Reporting	69	375	971	1,340	1,889	2,349	2,655

Source: Regional Transportation Commission of Southern Nevada, 2005

Commuters can also participate in the Club Ride program individually, without employer involvement. The database of registered members can be accessed through the internet; enabling perspective members to locate individuals residing near their homes, work places, and having similar schedules, making it easy to match potential carpool rides.

■ Park-and-Ride

The city of Las Vegas currently has two funded Park and Ride facilities under development within the city at (1) Durango and Westcliff, and (2) Grand Montecito Parkway and Oso Blanca (U.S. Highway 95 and Durango). The city owns both of these sites and is negotiating Interlocal Agreements to relinquish land ownership to the RTC. Construction of these facilities is anticipated to begin within the next 12-24 months. Additionally, RTC's South Strip Transfer Terminal (SSTT) has a Park and Ride, which is currently being expanded.



ANALYSIS

"Rapid population and employment growth have resulted in increased travel demand as well as traffic congestion in the Las Vegas area, putting pressure on the roadway infrastructure."²⁵ The Travel Demand Forecast Model (TDF) projects that high growth rates will continue in the region over the next 25 years. In the same manner that households balance their family budget by increasing income and decreasing expenditures, the tools for an effective transportation plan includes increasing the capacity of roadways, and reducing the number of vehicular trips by offering attractive multi-modal travel options.

The development and implementation of public transportation is a coordinated effort among the city of Las Vegas, RTC, and other municipalities. The primary documents that guide RTC in determining projects and transit service are outlined in their Regional Transportation Plan (RTP) FY 2006-2030, and Transportation Improvement Program (TIP). To assist in identifying and developing a strategic plan to guide future investment priorities related to mass transit, the RTC contracted with Parsons, a private consulting firm, in association with the University of Nevada, Las Vegas Transportation Research Center. In 2002, Parsons completed the Las Vegas Valley Transit System Development Plan, enhancing RTC's ability to appraise transit opportunities.

SHORT TERM GOALS AND PRIORITIES

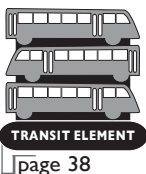
RTC has established the following short-range priorities: 1) maintenance of the fixed route transit and paratransit vehicles and service; 2) development of the new Sunset Maintenance Facility; and 3) continued development of the regional rapid transit system.²⁶

BUS FLEET

The attempt to meet transit needs associated with the 24-hour operations of the gaming, entertainment, and service-based industries within Las Vegas results in extremely heavy usage of transit vehicles that far exceeds industry standards for mileage in service. For many years, insufficient funding hampered RTC from replacing their aging fleet. Continued operations above industry standards mandated the development and implementation of a major bus replacement program. RTC anticipates the acquisition of approximately 100 new fixed route coaches and 200 paratransit vehicles to replace coaches retiring within the next few years. New transit vehicles procured utilize

²⁵ Ibid

²⁶ *Transportation Improvement Program (TIP) FY 2007-2010 (RTC, April 2007)*



the newest technologies, enhancing their durability while reducing air pollution. Additionally, 50 new Bus Rapid Transit (BRT) vehicles will be introduced allowing some of the fleet to be redeployed, thereby enhancing fixed route service levels.²⁷

EVALUATION OF SERVICE FREQUENCIES AND REALLOCATION OF RESOURCES

Shortages in available resources to accommodate increased service demands compel the RTC to continually scrutinize and analyze each route to determine relative productivity compared with the greatest needs. Resources are reallocated and service frequency increased on routes experiencing overcrowding, maximizing the overall efficiency of the system within budgetary constraints.

FUTURE PROJECTS

Working towards their goal of developing and operating a multimodal transportation system, the RTC will introduce several projects and services to the community within the next few years, such as:

- ***In 2009, the U.S. 95 High Occupancy Vehicle (HOV) Express Service***

Transit service in the upper northwest sector of Las Vegas is extremely limited. RTC is currently negotiating with city officials, the College of Southern Nevada (CSN), and landowners to procure or lease property at Grand Montecito Parkway and Oso Blanca (near U.S. Highway 95 and Durango Drive) for a Park-and-Ride facility and transit center. Once the facilities are constructed, RTC anticipates introducing an express service featuring commuter coaches with high back, reclining seats. The service will utilize the HOV lane on U.S. Highway 95, traveling to/from downtown Las Vegas and the Strip. Express service will be available during peak operating hours in the morning and evening.²⁸

- ***In 2009, the Durango Drive and Westcliff Express Service***

The city of Las Vegas is presently negotiating with RTC to relinquish land ownership for property located at Durango Drive and Westcliff to construct a park-and-ride and transit center. Once the facilities are constructed, RTC intends to operate express service non-stop from the park-and-ride to the DTC (or CCITT), then non-stop to the SSTT, continuing to McCarran International Airport. Furthermore, an HOV lane on Summerlin Parkway and

²⁷ Ibid

²⁸ Future Vision: Transit System Map; Transportation Improvement Program (TIP) FY 2007-2010

direct connector ramps between Summerlin Parkway HOV lanes to the U.S. Highway 95 HOV lanes are projected as part of a widening project expected to be completed in 2011. Once the project is complete, the express bus service anticipates using the HOV lanes to expedite travel times.

- ***In 2009, the Sunset Maintenance Facility***

According to the RTC, “the Sunset Maintenance Facility, one of RTC’s top short-term projects, is critical to the continued development of the BRT and Fixed Guideway systems, as well as to the continued improvement of fixed-route bus service and paratransit operations.”²⁹ The current maintenance facility is on leased property and the owner has declined to renew the lease beyond its expiration.

- ***In 2009, the Las Vegas Resort Corridor “Ace” Downtown Connector Service***

When the Federal Transit Administration withdrew funding in 2006 for the Monorail extension to provide service to downtown Las Vegas, RTC re-evaluated possible transit options and selected a proposed high-grade rapid transit service (BRT) as a viable alternative. The conceptually defined higher quality, higher speed transit service will accommodate a seamless connection with smaller people-movers, pedestrian access, or other private property transit facilities.³⁰ As shown on Map 4, the alignment for the Las Vegas Resort Corridor Downtown Connector is proposed within the city of Las Vegas’ Downtown Centennial Plan area.

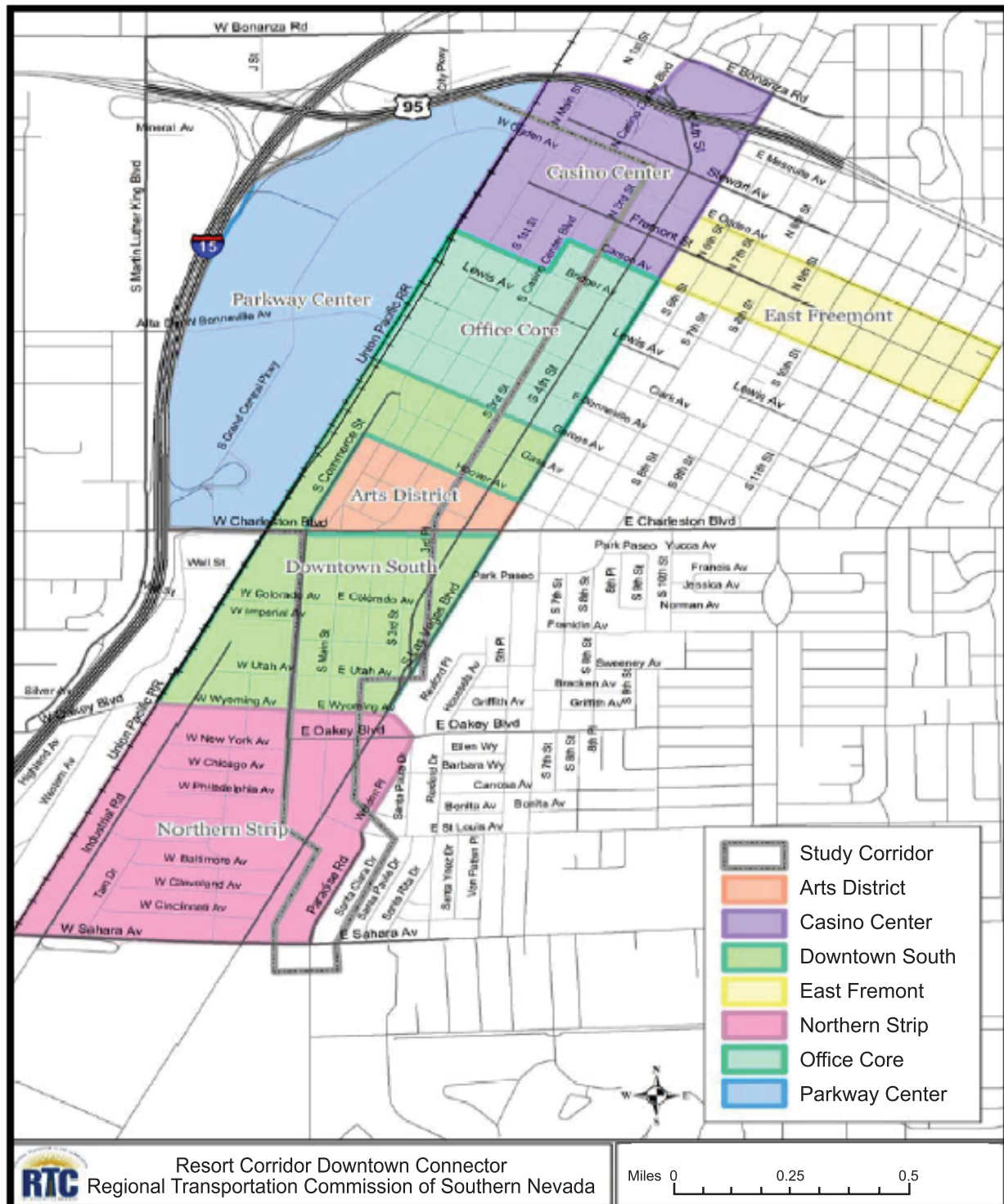
Development in the areas surrounding the proposed Downtown Connector route shows an upward trend towards intensified uses on under-utilized properties. Several residential, commercial, and mixed-use projects have been built, are under construction, or in the planning stages (Map 5 depicts the existing zoning designations; Map 6 depicts the land use development and future projects within the area surrounding the proposed Downtown Connector route).

The project is an essential mobility tool to add redevelopment in and around the city center. Land use surrounding the route is mainly commercial with mixed-use variations. The Downtown Connector will link retail and commercial areas along Grand Central Parkway west of downtown with the center of downtown Las Vegas. The proposed route (described in more detail below) will pass the site of the RTC’s future transit terminal (Central

29 *Transportation Improvement Program FY 2007-2010 (RTC, April 2007)*

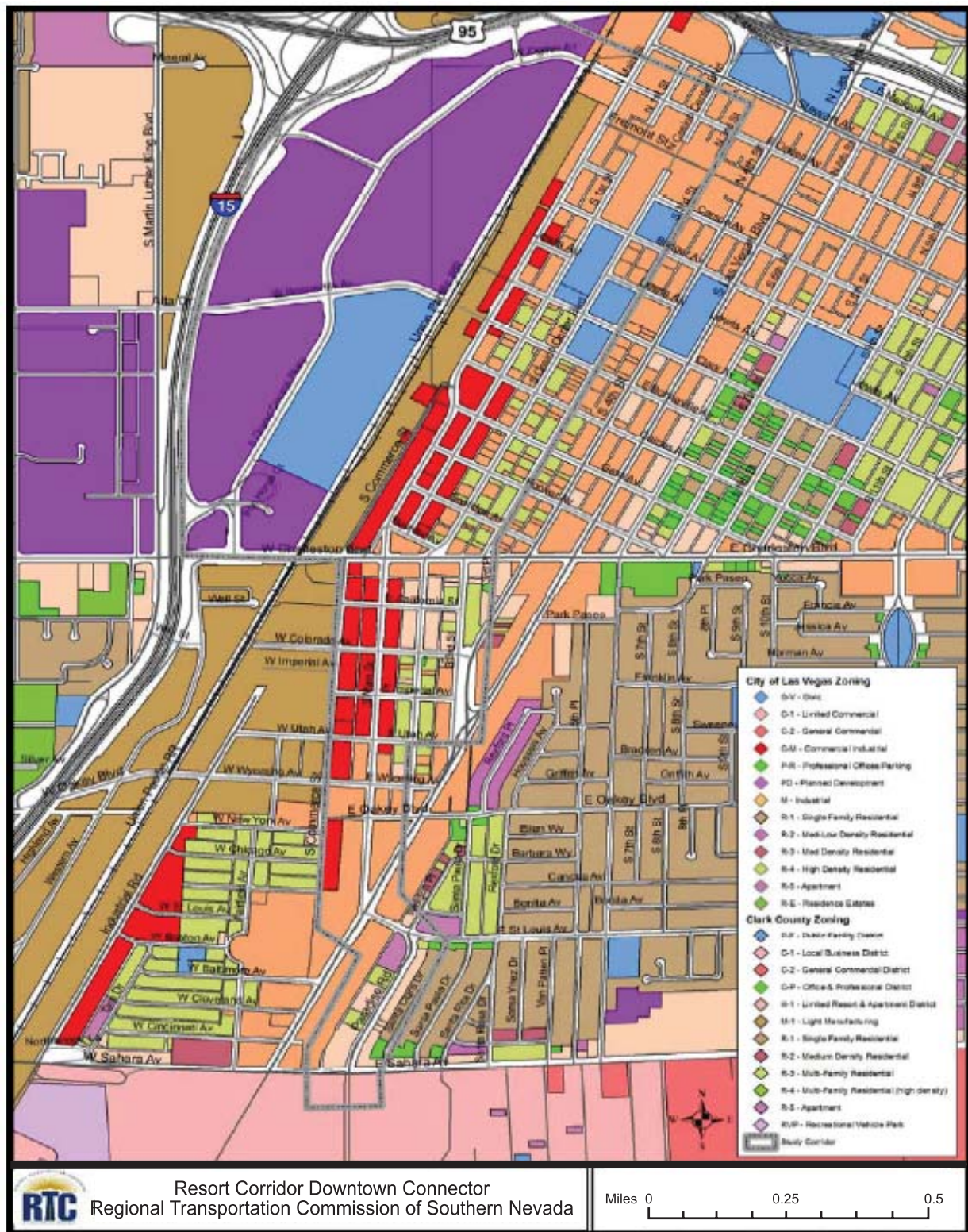
30 *Ibid*

Map 4: Las Vegas Downtown Planning Districts



Source: LV Resort Corridor Downtown Connector Environmental Assessment (RTC, June 28, 2006)

Map 5: Existing Zoning Destinations



Source: LV Resort Corridor Downtown Connector Environmental Assessment (RTC, June 28, 2006)

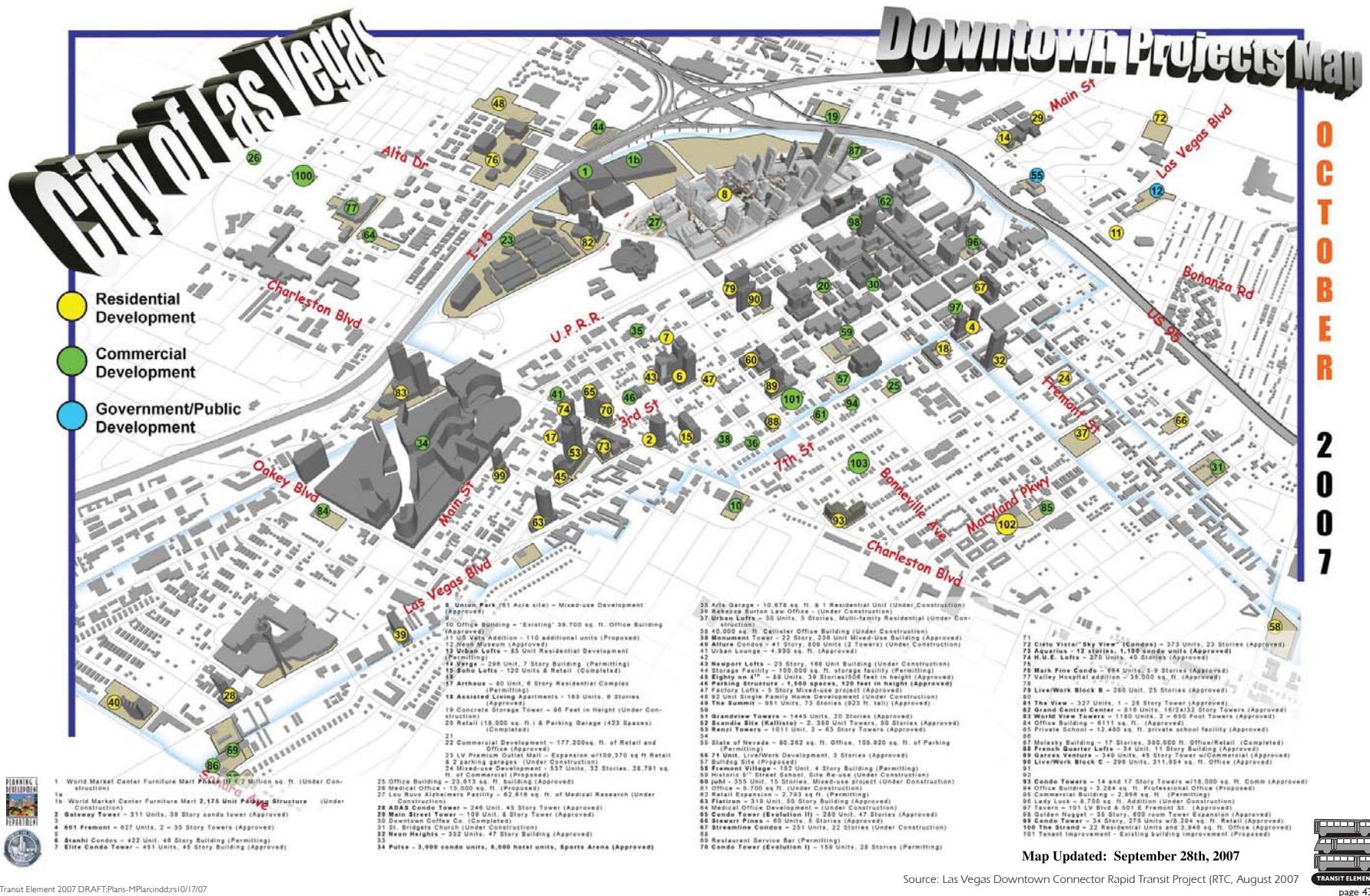
City Intermodal Transit Terminal), and continue through the Arts District, proceeding to the northern terminus of the Las Vegas Monorail at Sahara Avenue, with stations strategically placed along the route.

The Downtown Connector route will be approximately 3.9 miles long, beginning at the northern terminus of the Las Vegas Monorail Company's (LVMC) system at Sahara Avenue and Paradise Road, terminating at Grand Central Parkway and Iron Horse Court. The line will run north on Paradise Road, west on St. Louis Avenue for a short distance, turn north on Main Street, east on Imperial Avenue, north on 3rd Street, connecting to Casino Center Boulevard at Charleston Boulevard, and west on Ogden Avenue. From there, it will continue west onto Grand Central Parkway to the World Market Center, Union Park, Premium Outlet Mall, Clark County Government Center and the RTC Administrative building. The route will pass through an area of high-density residential development currently under construction or planned for construction in the near future³¹ (see Map 7 for the route).

The city of Las Vegas has required a center-running rapid transit option with stations mid-street so as to better mimic train travel, differentiate it from the regular CAT bus service, and possibly accommodate future light rail. The majority of the Downtown Connector will be center-running, except for the portion south of Imperial Ave to the airport, which will operate in mixed traffic until mechanisms are in place to accommodate center-running operations (see Illustrations 1-4, Appendix A).

³¹ Ibid

Map 6: Land Use Development/Future Projects



Map Updated: September 28th, 2007

Source: Las Vegas Downtown Connector Rapid Transit Project (RTC, August 2007)



Analysis



Map 7: Las Vegas Resort Corridor Downtown Connector Route and Stations



Source: Las Vegas Downtown Connector Rapid Transit Project (RTC, August 2007)

In January 2007, a call for proposals was sent out to artists by the city of Las Vegas, Clark County, and the RTC soliciting designs for the station displays for the Downtown Connector route. Each station design was required to reflect the theme "Stop and Glow," manifesting light or the concept of light. A committee appointed by the Las Vegas Arts Commission selected proposals based on artistic merit, and the guidelines and bylaws governing the selection of artists set forth by the Commission and approved by the City Council. Once the artists were selected, all governing bodies were allowed to choose the design they felt best suited their interests. Eight station locations are to be located along the Las Vegas Resort Corridor Downtown Connector as indicated below, with the artist's schematic for each stop contained in Appendix A.

1. Premium Outlet Mall: North of Bonneville Avenue and Grand Central Parkway (station artistic design created by Eric Pawloski).
2. Discovery Drive: South of Bonneville Avenue and Grand Central Parkway (station artistic design created by Brian Porray).
3. City Parkway: South of Discovery Drive and Grand Central Parkway (station artistic design created by Danielle Kelly).
4. Fremont Street: North of Carson Avenue and Casino Center Drive (station artistic design created by Stephen Hendee).
5. Garces Avenue: Garces and Casino Center Drive (station artistic design created by Sean Russell).
6. Arts District: Coolidge Avenue and Casino Center Drive (station artistic design created by Evan Dent).
7. Stratosphere Station: Main Street and east St. Louis Drive (station artistic design created by Todd VonBastiaans).
8. Las Vegas Convention Center (LVCVA): Paradise Road and Convention Center Drive (station artistic design created by Catherine Borg).

Two additional stations at Imperial Avenue and 3rd Street; and at Grand Central Parkway at City Parkway are anticipated in the future.

DOWNTOWN CONNECTOR FINANCIAL ANALYSIS

Financial investments for the downtown connector service consist of two categories: Capital costs, and operation and maintenance costs. Capital costs include funding for initial construction, purchase of vehicles, and any system facilities. Operation and maintenance costs include costs of fuel, labor, vehicle maintenance and repairs, and automated system controls.

The estimated capital costs and year of expenditure (YOE) costs (required for assessing feasibility) are indicated in Table 4. These costs assume that the full project would be constructed and operational by late 2008. The total annual cost for operations and maintenance for the Las Vegas Resort Corridor Downtown Connector (in 2006 dollars) is estimated at \$5,237,940.

Table 4: Capital Cost Estimates

Cost Category	2006 Dollars (thousands)	YOE Dollars (thousands)
Guideway & Track Elements	\$4,670	\$4,839
Stations, Stops, Terminals, Intermodal	\$7,602	\$7,877
Site work & Special Conditions	\$15,680	\$16,247
Systems	\$4,939	\$5,118
Professional Services	\$8,940	\$9,489
Contingency	\$8,366	\$8,714
Total Costs	\$50,197	\$52,284

Source: Environmental Assessment: Las Vegas Resort Corridor Downtown Connector (RTC, June 28, 2006)

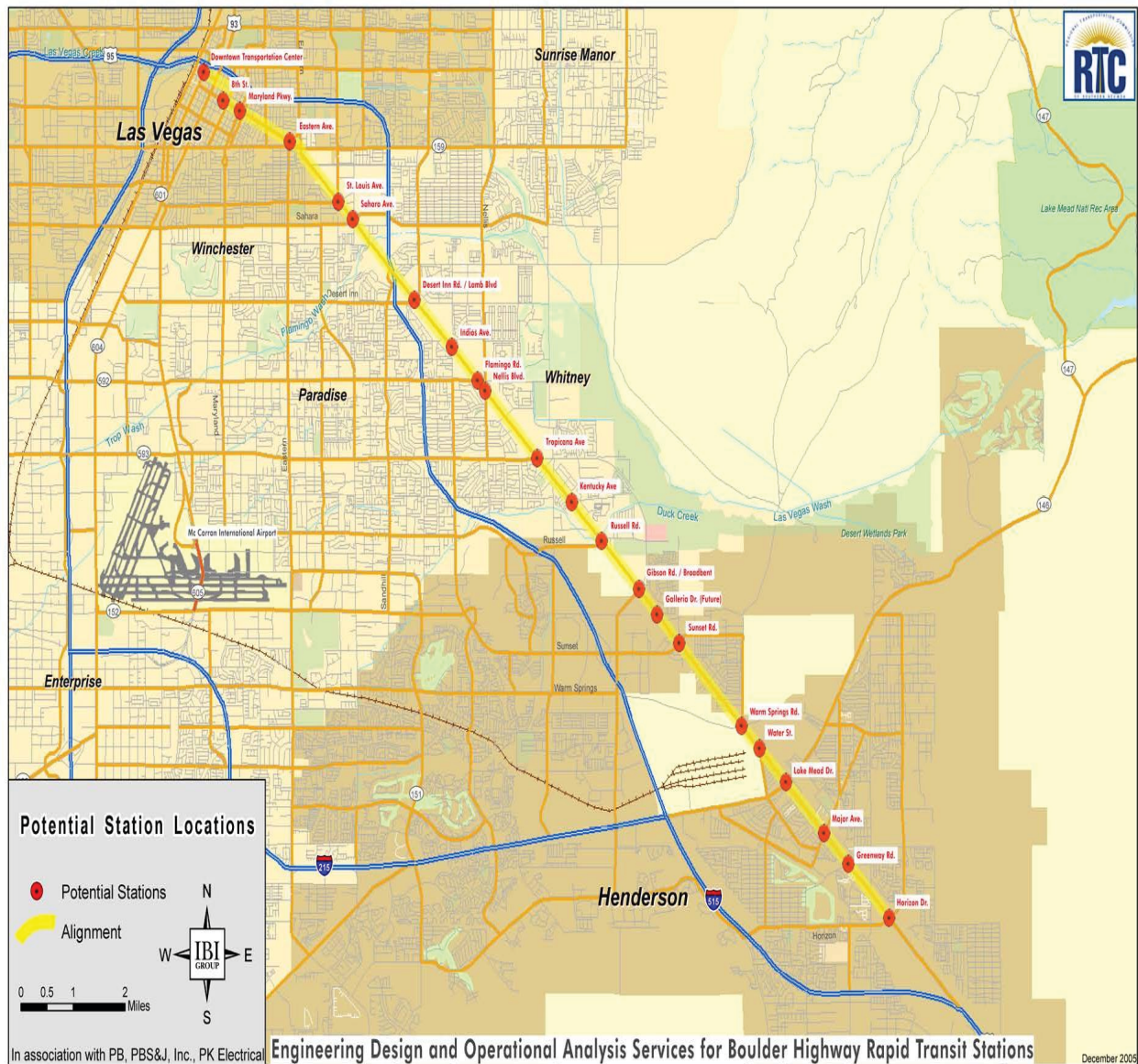
Funding sources for the proposed Downtown Connector route are projected to come from FTA Section 5309 Fixed Guideway Discretionary Funds in the amount of \$24.945 million (representing 47.7 percent of the estimated total capital cost) and from commercial paper in the amount of \$27.339 million (representing 52.3 percent of the total).³²

RTC anticipates the introduction of the Downtown Connector service will increase transit trips in the Las Vegas region by over 4,500 per day, or over 1.5 million transit trips annually. Ridership (boarding) is estimated to be approximately 14,300 (eight stations), with transit users saving over 479,000 hours in travel time in the forecasted year 2030.³³ A high speed, high quality enhanced transit service in the Las Vegas

³² Ibid

³³ Ibid

Map 8: Boulder Highway Bus Rapid Transit System Route



Source: Regional Transportation Commission of Southern Nevada (RTC), December 2005

central business district is a necessary step towards reaching the city's goals and objectives in connecting downtown with other employment, entertainment, and shopping nodes within the valley and making transit a more attractive travel alternative.

Future Projects (continued)

- **In 2010, the Ace Boulder Highway Service**

Boulder Highway, a major north-south arterial connects the city of Las Vegas, unincorporated Clark County, the city of Henderson, and Boulder City. It extends from the southeasterly tip of the City of Henderson and goes to the northern terminus of the Downtown Transportation Center (DTC), with the corridor having predominantly commercial areas with limited residential areas in the nearby vicinity. The combined factors of high and growing transit use plus the physical characteristics of the existing roadway right-of-way, provides opportunities for MAX bus rapid transit (BRT) service in this corridor (see Map 8).³⁴ In 2006, transit ridership along Boulder Highway (Route 107) was roughly 2,636,681 people.

- **In 2011, the Ace North 5th Street Corridor Service (located only in North Las Vegas)**

Located in North Las Vegas, North 5th Street is projected as a major arterial route, and as such, is the most probable alignment for the northern leg of the Regional Fixed Guideway. Recommendations to widen the road to 150 feet wide would provide not only pedestrian walkways with landscaping and sidewalks, but leave sufficient room for dedicated transit lanes. The availability of dedicated travel lanes makes this route a likely candidate for BRT service.³⁵

- **In 2011, the Ace Sahara Ave Service**

Sahara Avenue between the CC- 215 Western Beltway and Hollywood Boulevard, a distance of approximately 17 miles, is another candidate for a MAX rubber tired rapid transit service route due to the high transit ridership and availability of right-of-way. The street is a major east-west six-lane urban arterial, with three travel lanes in each direction, and a curb-to-curb pavement width of 100 to 150 feet at major intersections. Medians along the majority of the corridor direct traffic into and prohibit left turns out of commercial developments. On-street parking is prohibited along the entire length of the corridor.³⁶

North of Sahara Avenue is the city of Las Vegas' jurisdiction and south of Sahara Avenue is generally unincorporated Clark County. Land use on the west and east ends of Sahara Avenue and the surrounding areas is predominantly residential with single-family homes, apartments, and condominiums as indicated on Map 9. Sahara Avenue between Durango Drive and Las Vegas Boulevard and from Paradise Road to I-15 is characterized by intense commercial development, including neighborhood commercial centers, large retail stores, car dealerships, and restaurants (see Map 10).

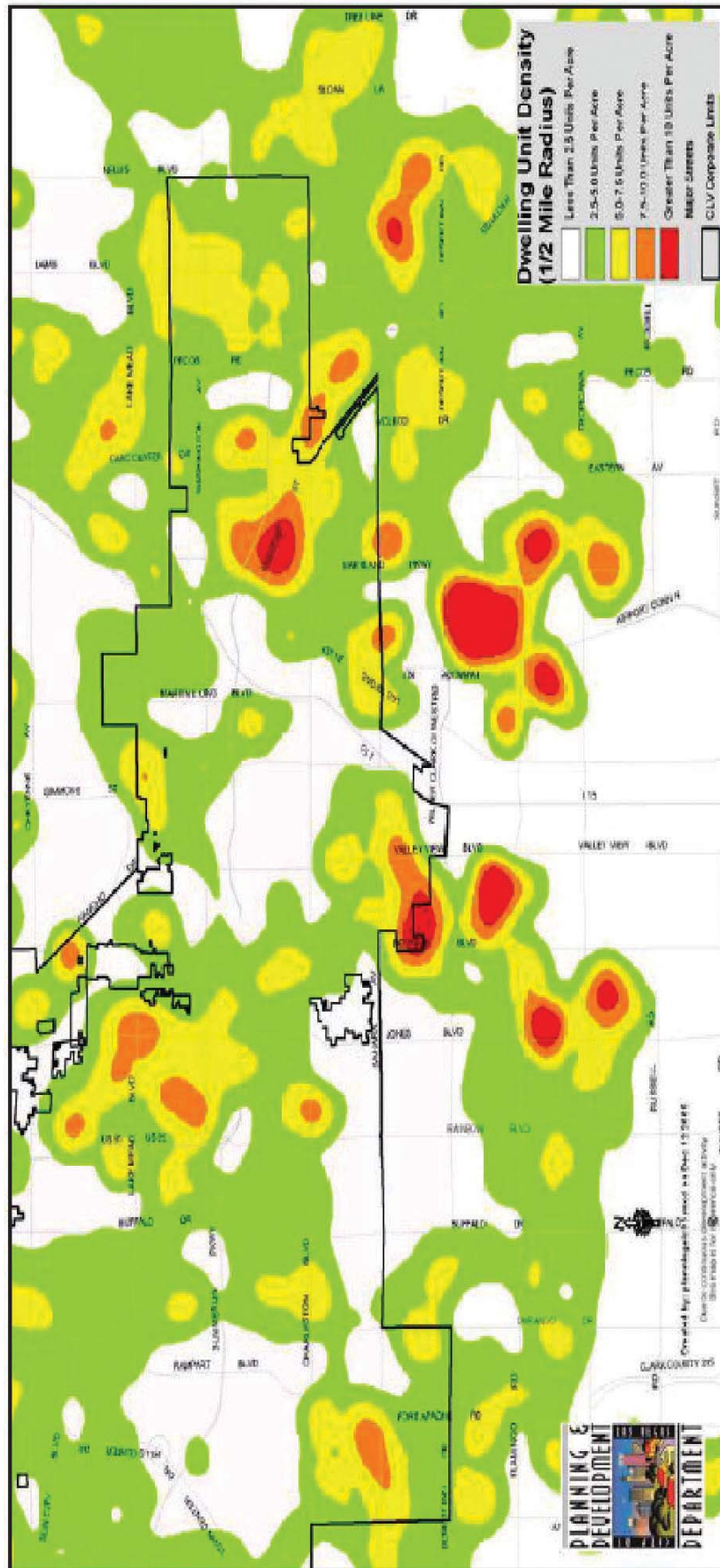
³⁴ *Las Vegas Valley Transit System Development Plan (Parsons, 2002)*

³⁵ *Regional Transportation Plan (RTP) FY 2006-2030*

³⁶ *Las Vegas Valley Transit System Development Plan (Parsons, 2002)*

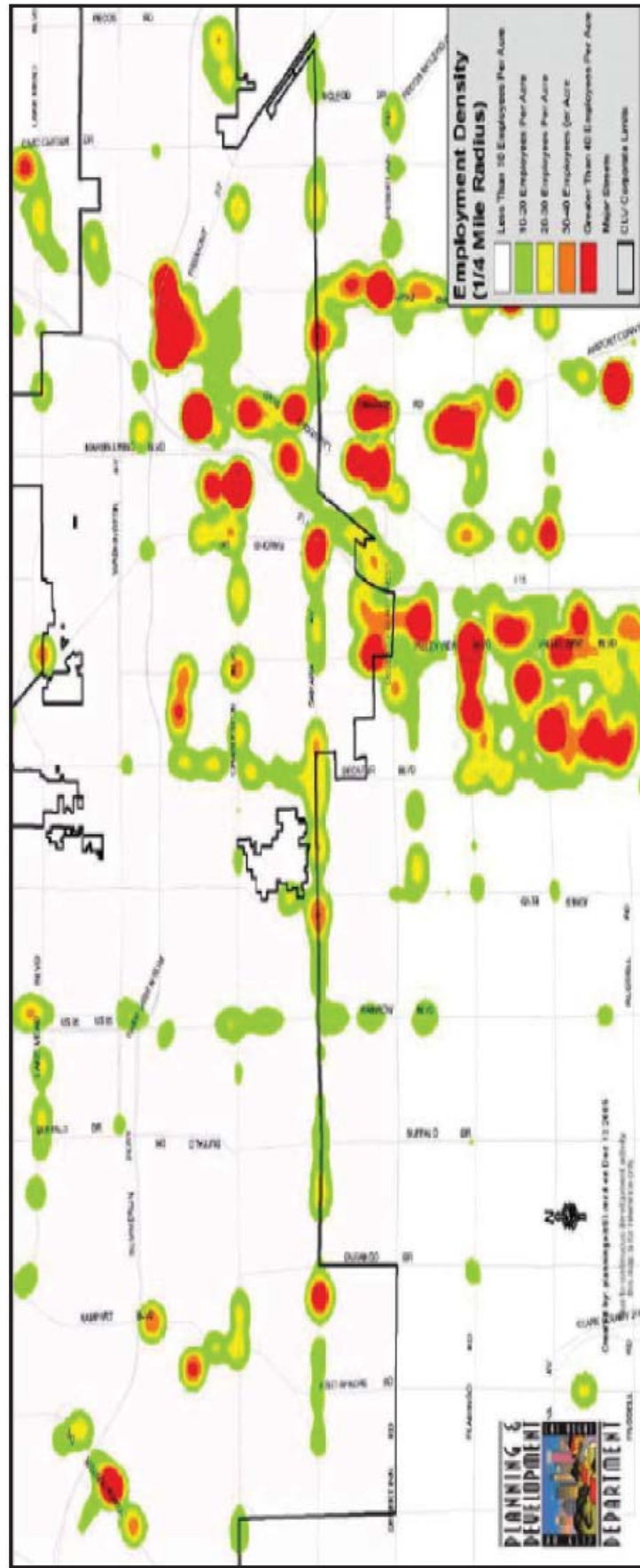


Map 9: Sahara Avenue Dwelling Unit Density



Source: Sahara Avenue Corridor/Rapid Transit Study (RTC Website, February 2006)

Map 10: Sahara Avenue Employment Density

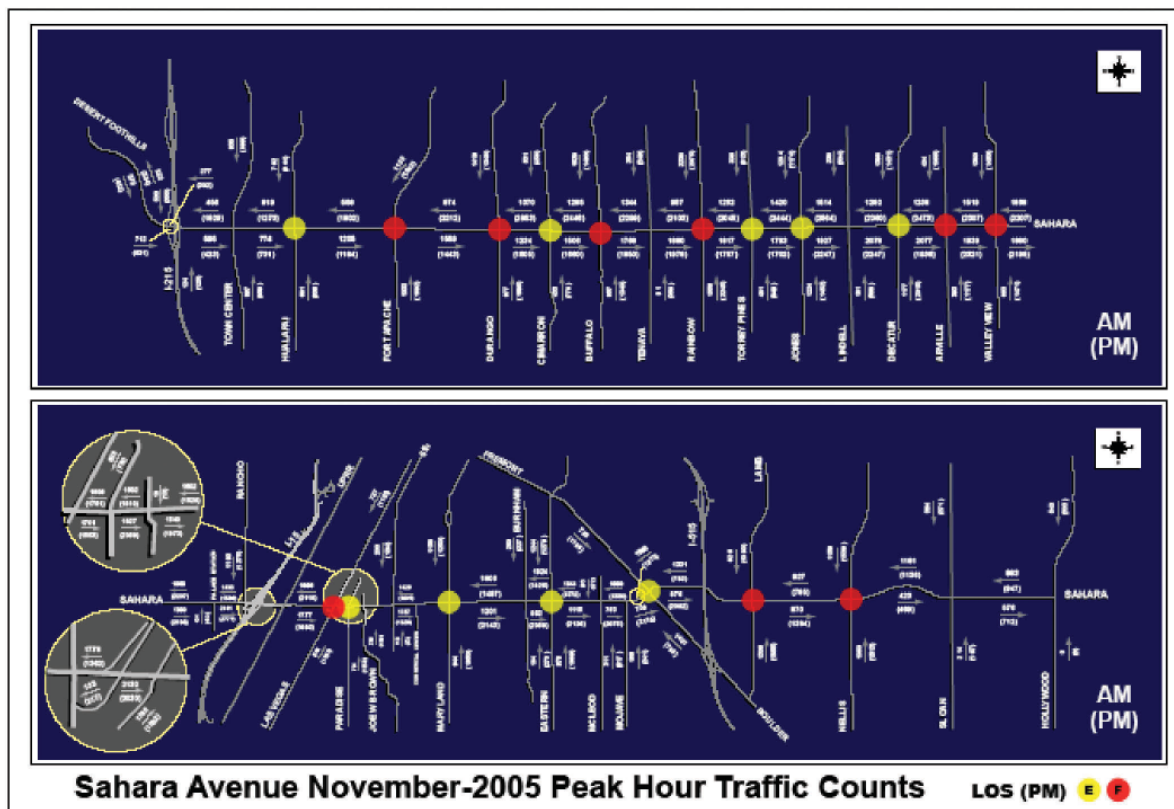


Source: Sahara Avenue Corridor/Rapid Transit Study (RTC Website, February 2006)



New developments in close proximity to the arterial continue to flourish, increasing the demand for transit on an existing heavily used route. Ridership on Sahara Route 204 grew from approximately 2,100,000 riders in 2004, to 2,870,000 in 2006. Furthermore, in November 2005, studies revealed that at signalized intersections along Sahara Ave., the Level of Service (LOS) or average delay experienced by vehicles indicated that most intersections along the corridor were either near or at capacity (see Map 11).

Map 11: Sahara LOS Peak Hour Traffic Counts



Source: Sahara Avenue Corridor/Rapid Transit Study (RTC Website, February 2006)

RTC retained engineers and planners from The Louis Berger Group, in cooperation with Parsons Brinckerhoff to assemble data on existing land use, traffic, and transit conditions along Sahara Avenue. Four different alternatives were discussed ranging from pursuing no action at all; side running rapid transit in dedicated lanes with a one-way couplet in the Resort Corridor; side running rapid transit in dedicated lanes with mixed flow in the Resort Corridor; and center running (west side) and side running (east side) rapid transit in dedicated lanes with a one-way couplet in the Resort Corridor (see Table 5 for alternative capital cost estimates).

Table 5: Capital Cost Estimate for Sahara Avenue Alternatives

Sahara Avenue Rapid Transit Capital Costs				
	Alternative 1	Alternative 2	Alternative 3	Alternate 4
	CAT 204 Operations Only (No Build)	Side Running Rapid Transit in dedicated Lanes (with one-way couplet in Resort Corridor)	Side Running Rapid Transit in dedicated Lanes (with mixed flow in the Resort Corridor)	Center Running (west side)- Side Running (east side) Rapid Transit in dedicated Lanes (with one-way couplet in Resort Corridor)
Roadway Improvements	\$0	\$17,799,923	\$17,799,923	\$69,127,105
▪ West Side	\$0	\$11,190,000	\$0	\$11,190,000
▪ East Side	\$0	\$7,119,969	\$7,119,969	\$7,119,969
Total		\$36,109,892	\$24,919,892	\$87,437,074
Station Improvements				
# of Stations				
▪ West Side	N/A	18	18	18
▪ Resort Corridor	N/A	6	6	6
▪ East Side	N/A	14	14	14
Total Station Costs	N/A	\$16,093,000	\$16,093,000	\$16,807,600
Vehicle Costs				
Rapid Transit Vehicle (\$1,300,000 ea)	\$0	\$14,300,000	\$14,300,000	\$15,600,000
CAT 204 Vehicle Costs (\$500,000 ea)	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000
Total Vehicle Costs	\$3,000,000	\$17,300,000	\$17,300,000	\$18,600,000
Total Capital Costs	\$3,000,000	\$69,502,892	\$58,312,892	\$122,844,674

In March 2007, the team concluded that a substantial investment is required to accommodate the predicted growth in the corridor involving a multi-stage, multi-modal solution. After subsequent discussions the multistage plan recommendation consists of:

1. The implementation of a bus rapid transit service by converting the existing shoulder into a dedicated bus lane (see Figure 2). According to the report, bus rapid transit was the only substantive improvement that could be accomplished without time-consuming and expensive right-of-way acquisition. From Hualapai Way to Richfield Boulevard and from Paradise Road to Mojave Road, Sahara Avenue would be re-stripped to provide an outside bus lane in both directions. Right-turn pockets at signalized intersections would be constructed in existing right-of-way, keeping cars out of the bus lane approaching intersections and thereby allowing buses to pass through each signal on the first green light. The proposed BRT route is anticipated to provide more buses with shorter headways and travel greater distances between stops. The anticipated changes are expected to draw more riders, increasing annual ridership from 2 million to over 5 million after implementation.³⁷
2. Secondly, the construction of a westbound Sahara Avenue one-way east-west couplet at Las Vegas Boulevard was evaluated. Due to the excessive cost associated with acquiring the land needed to construct the couplet, the team decided that it would be cost prohibitive and therefore this option was not pursued at this time. Increasing vehicular traffic into the Resort Corridor is not possible without a very substantial increase in the capacity of Sahara Avenue. To accommodate increased traffic flow and capacity on Sahara, the road will be widened from Industrial to Paradise.
3. Subsequent to the implementation of BRT and roadway capacity improvements at Las Vegas Boulevard, the construction of a super-arterial eastward from Las Vegas Boulevard to I-515 is recommended. The super-arterial would include grade separations at Maryland Parkway, Eastern Avenue, and Boulder Highway, providing two east-west through lanes crossing over or under Maryland Parkway, Eastern Avenue, and Boulder Highway, one at-grade automobile lane providing local access, and one outside dedicated bus lane. Traffic signals to maintain local access at side streets would be installed. The super-arterial could be constructed in sections from west to east, starting at Joe W. Brown and terminating at the Sahara Avenue Interchange.³⁸ Minor roadway improvements such as upgrading left turn bays, and improving channelization should be constructed simultaneously in the same area.

³⁷ Sahara Ave. Corridor Rapid Transit Study Alternative Analysis Report (The Louis Berger Group, March 2007)

³⁸ Ibid

4. The final stage of the multimodal solution is pedestrian grade separations for Sahara Avenue at Las Vegas Boulevard to prevent pedestrians from crossing the intersection and blocking right turn movements. If pedestrian bridges were placed at Sahara Avenue and Las Vegas Boulevard today, the vehicular level of service would be improved from F to E. Pedestrian bridges already built on the Strip have cost approximately \$10 million dollars each, built on easements provided by the property owners. Unfortunately, no new development is occurring at Sahara Avenue and Las Vegas Boulevard, therefore financial commitments from property owners are not likely, and costs therefore would have to be borne by applicable governmental entities.

Table 6 below summarizes the estimated costs of the recommended Sahara Avenue Improvements. Although this alternative is considered the best solution to respond to increased traffic and congestion problems in the corridor, it is still conceptual in nature; and therefore may incur changes. As with the Downtown Connector, the city initially favored the center-running rapid transit alternative to better mimic train travel, differentiate it from the regular CAT bus service, and possibly accommodate future light rail. However, based on cost estimates, and the impacts to left turn vehicular capacity with the center running alternative, it was decided to pursue the side-running rapid transit alternative for Sahara Avenue.

Table 6: Estimated Capital Costs of Recommended Improvements

ALTERNATIVE	COSTS	
Bus Rapid Transit		\$55,300,000
▪ Road Construction	\$24,900,000	
▪ Stations	\$16,100,000	
▪ Vehicles	\$14,300,000	
One-way Couplet at Las Vegas Boulevard		\$74,600,000
Super Arterial		\$134,500,000
Minor Roadway Improvements		\$7,300,000
Total Estimated Cost of Recommended Alternatives		\$274,700,000

Source: Sahara Ave. Corridor Rapid Transit Study Alternative Analysis Report (The Louis Berger Group, March 07)

LONG TERM GOALS AND PRIORITIES

RTC 's "long-term vision of transit for the area involves overlaying the current CAT bus route grid with more intensive radical MAX rubber-tired rapid transit routes for improved transfer opportunities and speed."³⁹

SYSTEM DESIGN

High quality user-oriented transit service should optimally provide direct service between a user's origin and destination, without the need to transfer on schedules that match the user's needs. CAT's grid-based system design necessitates transfers, adding to already lengthy travel times. Overlaying the current system with routes resembling express-type service can significantly reduce travel and wait times for passengers. In addition to the five projected express/bus rapid transit (BRT) routes, RTC anticipates additional routes on Flamingo Road, Maryland Parkway, within the Southern Corridor, and a Summerlin Parkway HOV Express service. Future studies along Tropicana, Desert Inn, and Rainbow Boulevard may result in additional BRT routes on these busy arterial roadways. Overlaying express service on routes experiencing overcrowding, and in areas showing extensive growth potential, can free resources, thereby providing opportunities for expansion and increased frequencies system wide.

PARK-AND-RIDE FACILITIES

RTC's planned future park-n-ride facilities should encourage and promote transit use. Three preliminary park-and-ride locations under consideration are in the northwest near Town Center and the 215 beltway (City of Las Vegas); in the south near Las Vegas Boulevard South and I-15 (Clark County); and in the north near I-15 and Deer Springs Road (North Las Vegas). These locations potentially present opportunities to develop joint facilities that benefit the surrounding community. Exact locations for the proposed park-n-rides will depend on land use opportunities and agreements. MAX and express service to/from the park-n-ride facilities can attract non-users to public transportation while compensating for commute time lost to transfers.⁴⁰ Additionally, RTC has prioritized several potential Park-and-Ride/Pool locations in the Las Vegas area as either moderate or high priority as illustrated on Map 12.

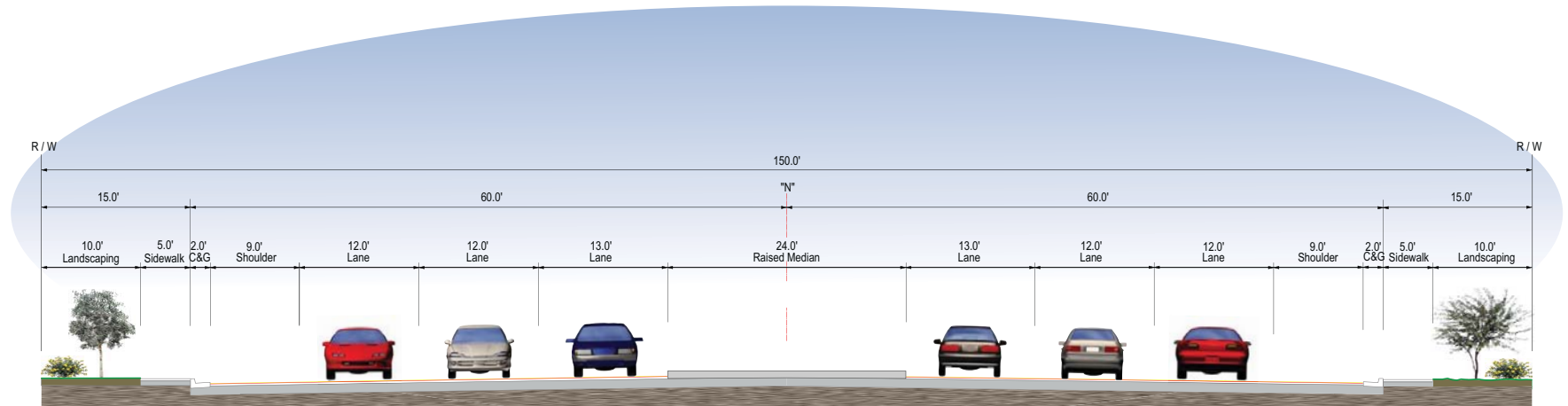
In addition to the Park-and-Ride facilities projected by the RTC, the city of Las Vegas has negotiated a Development Agreement with Kyle Acquisitions Group, LLC to dedicate a 2.5 acre parcel of land in the northwest to serve as a transit hub

³⁹ Ibid

⁴⁰ Ibid



Figure 2: Sahara Avenue Conversion of Outside Shoulder to Fourth Travel Lane



Preliminary-Conceptual Only-Subject to Change Sahara Avenue Existing 150-Ft Cross-Section

Source: Sahara Avenue Corridor Rapid Transit Study Alternative Analysis Report (The Louis Berger Group, Inc., March 2007)



and transfer point for various bus routes. The specific location for the transit hub will be agreed upon by Kyle Acquisitions Group, the city of Las Vegas and RTC, but will be located within the Town Center Mixed-Use District of the Kyle Canyon Master Plan area. As part of the agreement, at least one-half acre of the designated land will be used for parking to support the transit hub or as part of a joint venture park-and-ride facility with surrounding businesses.

REGIONAL FIXED GUIDEWAY (RFG)

The RTC is proposing a 33-mile Regional Fixed Guideway (RFG), linking the cities of Henderson, Las Vegas, and North Las Vegas with the Clark County Las Vegas Resort Corridor. The RFG is a rapid transit system consisting of elements such as rapid transit technology, level platform boarding, high-capacity vehicles with multiple door access, dedicated running way, off-board fare collection, stations, and platforms. Rubber tire and rapid transit vehicles similar to MAX will be used for the project. The goals for implementing RFG are to:

- Mitigate traffic congestion by providing an alternative system of transportation to attract daily commuters and thereby reduce the number of automobiles on the roadway network.
- Provide a quick, convenient and comfortable transit experience for riders as an attractive alternative to the automobile.
- Improve overall mobility and air quality for Southern Nevadans.⁴¹

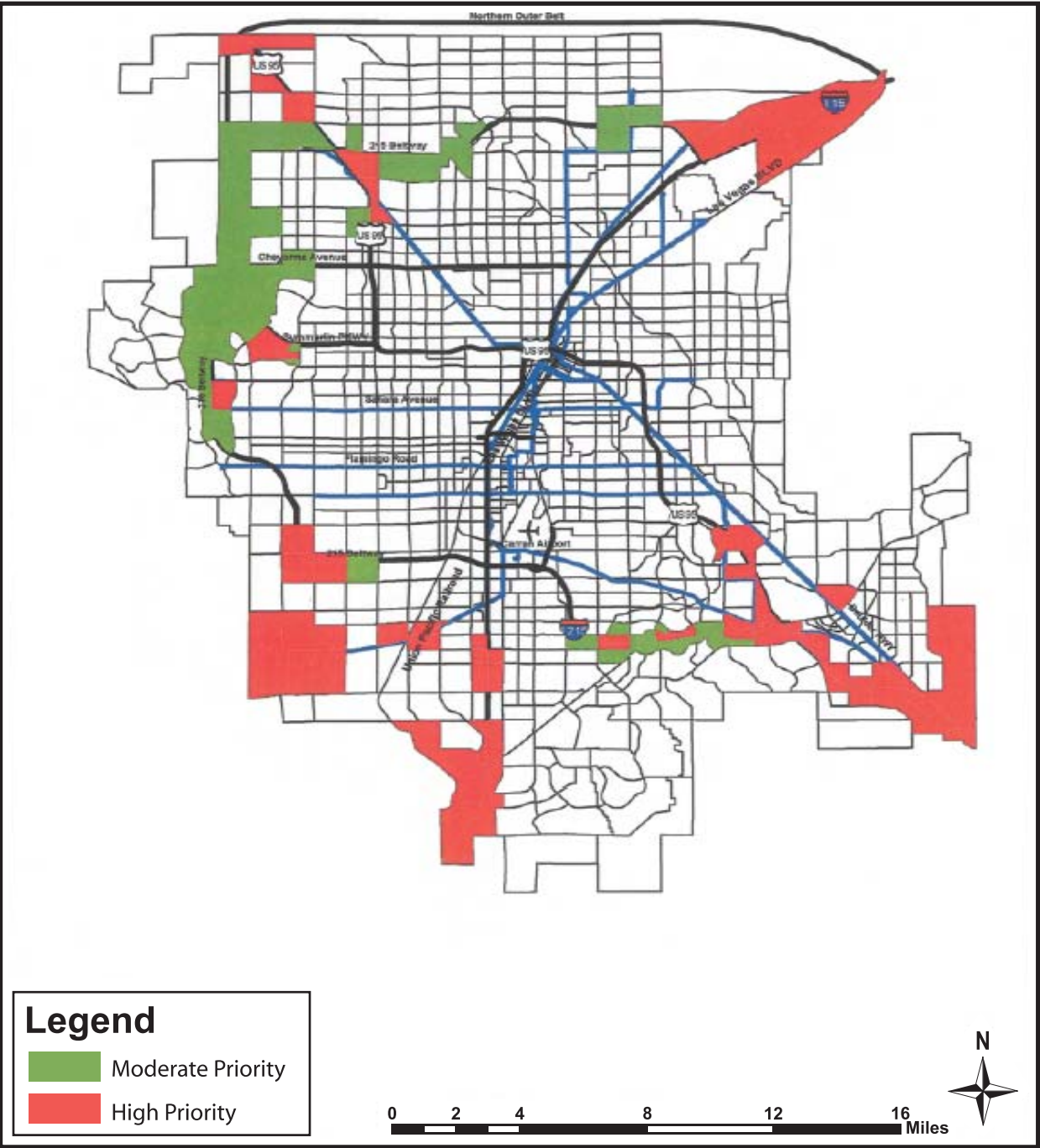
The first phase of the RFG project is the Las Vegas Resort Corridor "Ace" Downtown Connector service, projected to be operational in 2009. The second phase of the project will travel down the Las Vegas Resort Corridor. RTC is presently in the second year of an eight to twelve year process for design and implementation of the entire RFG system. RTC intends to start the Environmental Impact Statement (EIS) in mid-2007, with a timeline of two to four years until its completion.

CALIFORNIA-NEVADA INTERSTATE MAGLEV PROJECT

Providing a safe, reliable, environmentally friendly rapid transportation option between Southern Nevada, the Southern California Basin, and the Southern California Inland Empire, three of the fastest growing regions in the United States, is a project actively being pursued by the California-Nevada Super Speed Train Commission (CNSSTC). This project is being developed in accordance with the Maglev Development Program (23 U.S.C. Section 1218) and under the guidance of

41 Regional Fixed Guideway; Regional Transportation Commission website

Map 12: Potential Park-and-Ride/Pool Locations



Source: Cambridge Systematic, 2005 (RTP, 2006)

the Federal Railroad Administration. CNSSTC is a Nevada State agency and California Non-Profit Public Benefit Corporation, comprised of 16 members, eight from Nevada, and eight from California. The California-Nevada Interstate Maglev project is a proposed 432 km (268 mile) transportation system connecting Anaheim, California and Las Vegas Nevada via the California Inland Empire cities of Ontario, Victorville and Barstow by using Transrapid TM high-speed maglev technology. The Maglev is estimated to reach speeds of 500 km/h (311 mph) with an express time of approximately 87.5 minutes from Anaheim to Las Vegas.⁴² The system will have seven stations located in the cities of Anaheim, Ontario, Victorville, and Barstow in California, Primm in Nevada, the South Resort Corridor (SRC), and downtown Las Vegas. The three major phases of the project are:

- Phase 1 – Las Vegas (SRC) - Primm
- Phase 2 – Anaheim - Ontario
- Phase 3 – Ontario - Barstow - Primm - SRC- Downtown Las Vegas (see Map 13)

The timing of each phase is dependent on available funding and the final environmental clearances. The anticipated potential opening of the complete system is in 2015. Planned service characteristics and projected ridership, costs and benefits for the initial Maglev segments are shown in Tables 7 and 8.



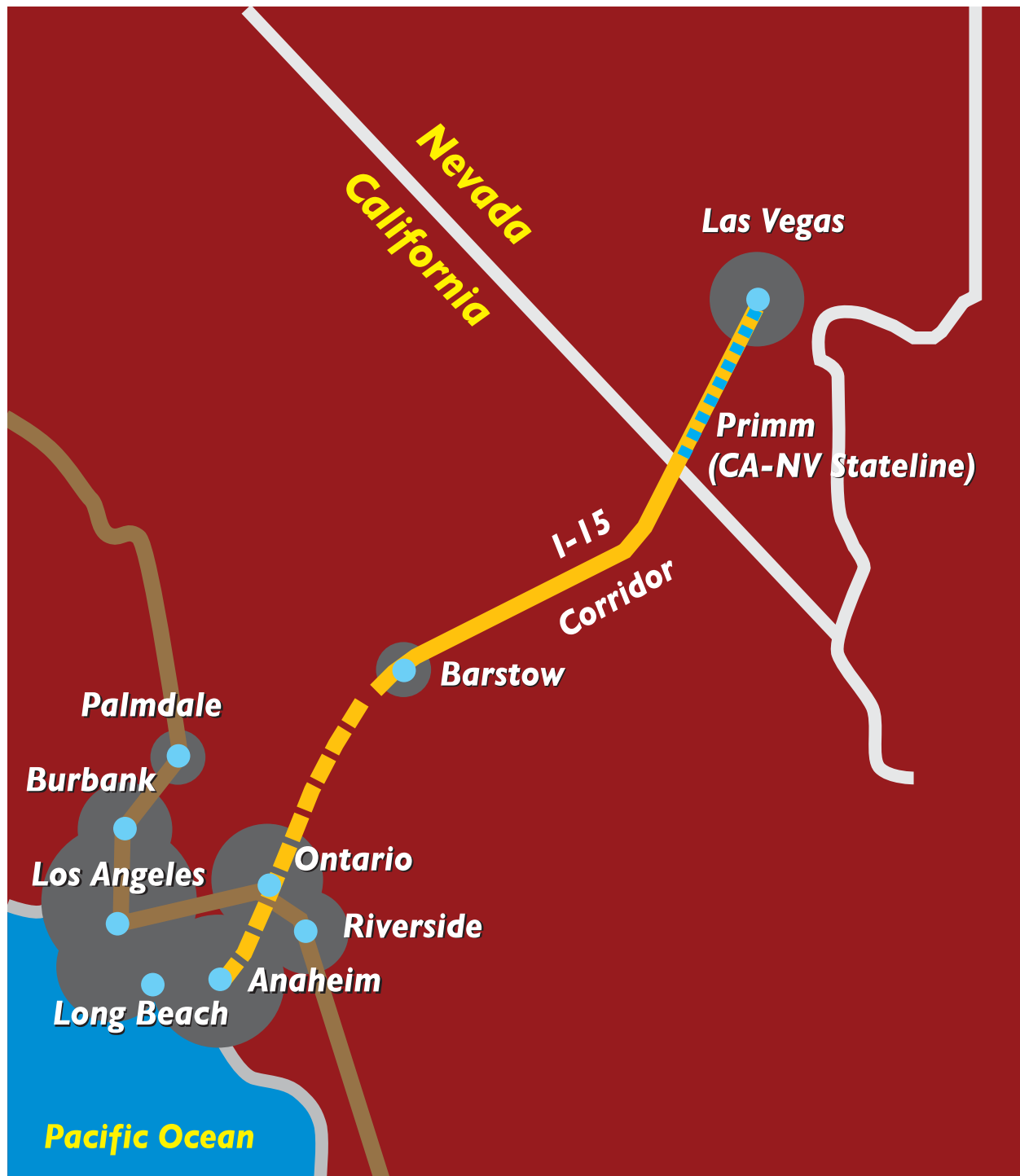
Maglev train



Maglev train track

⁴² California-Nevada Super Speed Train Commission (June 1, 2005)

Map 13: Interstate Maglev Corridor



LEGEND

Study Area
Planned

Proposed
HSGT



CHARACTERISTICS OF CALIFORNIA-NEVADA INTERSTATE MAGLEV PROJECT

Table 7: Planned Service Characteristics for Initial Segments and Las Vegas (SRC)- Anaheim

Operation: Route	Local/Regional: SRC- Primm	Commuter/Regional Anaheim - Ontario	Intercity: SRC- Anaheim
Revenue Guideway	(Initial Segment Service)	(Initial Segment Service)	(Full Corridor)
Single Track	37.6 km (23.3 mi)	0 km	120 km (74.4 mi)
Double Track	18.2 km (11.3 mi)	51.6 km (32.0 mi)	299.8 km (185.9 mi)
Trip Time	14.5/ 12 minutes	14.5/ 14.5 minutes	87.5 minutes express
Operating Headway	20 minutes	10 minutes	20 minutes
Operating Period	6:00 -1:00 (19 hours)	6:00 -1:00 (19 hours)	6:00 -1:00 (19 hours)
Trips per day	114 (one-way trips)	228 (one-way trips)	114 (one-way trips)
Vehicle Fleet	8-section trains 2 Train sets + 1 Spare (initial operation)	4-section trains 5 Train sets + 1 Spare (initial operation)	4- & 8-section trains 3 + 15 Train sets + 3 Spares
Vehicle Capacity- Seated Seated/Standing	639 passengers 1101 passengers	305 passengers 535 passengers	639 passengers 1101 passengers
Transportation Capacity: Seated pphpd Seated/Standing pphpd	1917 3303	1830 3210	1917 3303
Maximum Future Capacity Seated pphpd Seated/Standing pphpd	10608 17544	10608 17544	10608 17544

Source: California-Nevada Super Speed Train Commission and American Magline Group (June 1, 2005)

Note:

- *Local/Regional refers to a shorter distance with less frequency between two local communities*
- *Commuter/Regional refers to an expanded distance between two regional areas with increased frequency designed to accommodate workers commuting to and from work*
- *Intercity refers to travel to and from cities within different states*



Table 8: Projected Ridership, Costs, and Benefits for Initial Segments and SRC to Anaheim

Operation: Route	Local/Regional: SRC- Primm	Commuter/Regional: Anaheim - Ontario	Intercity: SRC- Anaheim
Projected Annual Ridership in 2025	(Initial Segment Service) 14.3 million	(Initial Segment Service) 13.9 million	(Initial Segment Service) 42.9 million
Fares (2000 \$)	\$4 to \$6	\$9	\$55 intercity \$4-\$6 local Nevada, \$9- \$12 local California
Average Annual Net Operating Revenue (2000 \$)	\$49.2 million	\$86.6 million	\$517.4 million
Capital Costs (2000 \$)	\$1.3 billion	\$2.6 billion	\$12.1 billion
Benefit/Cost Ratio	1.5	1.7	1.8

Source: California-Nevada Super Speed Train Commission and American Magline Group (June 1, 2005)

LAND USE

The city has control over land use designations, development, and the associated infrastructure. Land use typologies, along with the design and patterns of development directly influence the attractiveness and efficiency of transit systems. High-density residential units, office buildings, schools, facilities for the elderly, appropriately scaled retail and commercial service businesses, and mixed-use development are traditionally land uses supportive of transit. Car dealerships, big box retailers, low-density housing, motels, fast food franchises, large plot outdoor recreation, and similar auto-oriented, land consumptive uses tend to be non-transit supportive.

The local zoning code is the city's primary tool to implement land use goals, objectives, and policies. Permitted development, including required conditions are specified within the zoning code for every parcel within the city's jurisdiction. The current zoning code does not address allowable land use designations for park-n-ride locations. In determining permitted land use designations for park-n-ride locations, variables such as design and functionality, and neighborhood compatibility need to be considered. The facilities can vary from basic parking lots, to integrated gathering places with activities for the surrounding community, including appropriately scaled retail and service uses and other amenities.

The city is currently pursuing changes to Title 19 to encourage mixed-use and transit-oriented development and focusing residential reinvestment on sites within the central city area at densities that support mass transit usage. Densities



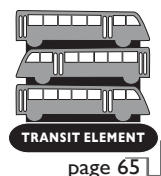
supporting the different types of transit systems are discussed in more detail in the following section. Concentrated mixed-use developments at transit supportive densities promote rider convenience, and allow for a more cost-effective expansion of transit services. Analysis of a proposed development's effect on transit ensures factors such as the walking distance to and from a stop, barriers to access, and environmental issues are considered. Long-range planning and road system design provide for the incremental extension of transit routes without the need to restructure or substantially revise existing service.

A discussion of the city's proposed mixed-use and transit-oriented development code and Clark County's Mixed-Use Overlay District regulations is presented below.

The City's Mixed-Use and Transit-Oriented Development Regulations

Plans to re-establish Downtown Las Vegas as the region's premier artistic, cultural, civic, financial and urban residential center of the valley have created a resurgence of activity. The anticipated increase in new restaurants, cafes, offices, apartments, lofts, and high-rise condominiums has compelled city officials to reassess existing land use configurations to promote continued redevelopment at more intensive urban scale densities. Adopted amendments to Title 19 (12/15/06), the Las Vegas Redevelopment Plan (11/03/99), and Neighborhood Revitalization Area Plan (1/24/04), have created mechanisms to facilitate mixed-use development capable of supporting mass transit, while promoting and actively working towards meeting the goals, objectives, and policies of the Las Vegas 2020 Master Plan.

The city of Las Vegas assembled a steering committee in May 2006, to address concerns by Planning Commission members regarding the height, traffic, intensity/density, parking, construction staging, and impacts to existing residential neighborhoods of mixed-used developments. A proposed mixed-use ordinance was forwarded to the NAIOP (National Association of Industrial and Office Properties) in August 2006 for review and comment. NAIOP offered suggestions for administering the standards for projects where unique conditions exist. The proposed ordinance, initially introduced to the Planning Commission on November 16, 2006, was held in Abeyance through January 25, 2007, at which time the item was "Tabled." The Planning & Development Department is currently re-evaluating the proposed ordinance, and intends to re-introduce it to the Planning Commission within the year.





The proposed revised definition for mixed-use development will be “a combination of certain residential and non-residential uses on a single parcel, or a mix of certain residential and non-residential uses within an area zoned for either residential or nonresidential use.” The city would allow mixed-use development with a Special Use Permit in R-3 (Medium Density Residential and Apartment District), R-4 (High Density Residential and Apartment District), P-R (Professional Office and Parking District), N-S (Neighborhood Service District), O (Office District), C-1 (Limited Commercial District), C-2 (General Commercial District), and C-PB (Planned Business Park District) zoning areas.

In addition to the proposed modifications to the mixed-use ordinance, the Planning & Development Department is seeking approval to add a Special Use Permit category for “Transit-Oriented Development.” Transit-oriented development is proposed to be defined as “a mixed-use development that is in direct proximity to either BRT (Bus Rapid Transit) or light rail stations.” Creating a new category for transit-oriented development will encourage the development of mass transit and direct more intensive development to areas along transit lines. Furthermore, adoption of the transit-oriented development category can assist RTC in developing the proposed Bus Rapid Transit (BRT) routes on Boulder Highway, the Las Vegas Resort Corridor Downtown Connector, Sahara Avenue, North 5th Street, and along several other arterial roadways. Illustrations on proposed mixed-use and transit-oriented developments can be found in Appendix B.

Proposed changes to Title 19 to address concerns regarding mixed-use and transit-oriented development are as follows:

- Additional height will be allowed for mixed-use and transit-oriented development. Mixed-use project heights would be limited to five stories and 60 feet; for transit-oriented development, height limited to ten stories and 125 feet. A 3:1 proximity slope requirement of the Residential Adjacency Standards will apply to all commercial developments.
- Preliminary traffic generation figures will be submitted with the Site Development Plan Review applications for projects generating more than 100 peak hour trips. A formal Traffic Impact Analysis will be required prior to the issuance of permits for any development project that exceeds the threshold peak hour trips, and mitigation strategies (if required) will be determined at that time.

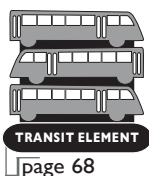
- Mixed-use developments typically have less impact than standard commercial developments of the same square footage due to reduced trip generation and economies that result from the sharing of services and infrastructure. Through a spectrum of allowable standards, intensity of development will be regulated by the impact of the development type.
- Construction staging requirements will be placed upon the projects as a condition of approval, rather than through an amendment to the zoning code.
- Mixed-use parking requirements will model peak-hour parking used by Clark County. The adoption of a common standard will assist to standardize regulations between the jurisdictional bodies in the Las Vegas Valley. The peak-hour parking tabulation requires the applicant to provide the maximum parking required for each use on the site, based on the percentage of occupancy for weekday and weekend time periods as indicated in Table 9 below. The proposal includes further reductions for transit-oriented developments, as proximity to transit stations will likely reduce parking demand.

Table 9: Mixed-Use Parking Requirements

General Land Use Classification	Weekdays			Weekends		
	Mid- 7am	7am- 6pm	6pm- Mid	Mid- 7am	7am- 6pm	6pm- Mid
Office	5%	100%	5%	0%	60%	10%
Retail & Personal Service	0%	100%	80%	0%	100%	60%
Residential	100%	55%	85%	100%	65%	75%
Restaurant	50%	70%	100%	45%	70%	100%
Hotel	100%	65%	90%	100%	65%	80%
Theaters	0%	70%	100%	5%	70%	100%

Source: City of Las Vegas Planning & Development Department





- Calculation of Parking Requirements: Calculate the number of spaces required for each use based on the gross square footage utilizing the minimum parking requirements contained in Title 19, Section 19.04. Applying the general land use category listed above to each proposed use; utilize the percentages to calculate the number of parking spaces required for each time period (six time periods per use). Add the number of spaces required for all applicable land uses to obtain a total parking requirement for each time period. Select the time period with the highest total parking requirement, and utilize that total as the mixed-use or transit-oriented requirement.
- Additional parking reductions for transit-oriented developments may be approved by the Las Vegas City Council in conjunction with a Site development Plan Review and include reductions such as:
 - Dedication of an easement or right-of-way for a transit station or shelter: 5% reduction.
 - Provisions of a Park and Ride facility with a minimum of 100 spaces dedicated solely to transit use: 10% reduction.

In addition to the proposed changes listed above that the Planning & Development Department is recommending for mixed-use and transit-oriented developments, the following associated code elements are being proposed for revision:

- The description of the N-S (Neighborhood Service District) will be amended to include mixed-use development as an allowable type.
- Condominiums will no longer be allowed in commercial districts as a stand-alone use, but will continue to be allowed as a part of a mixed-use or transit-oriented development.
- Minimum standards for mixed-use developments will be expanded to require streetscape treatments, open space and/or recreational amenities, build-to requirements, and specific standards for parking lots and parking structures, with the proposed standards for transit oriented developments similar to mixed-use.

The city believes that revising existing mixed-use regulations and creating a new category of transit-oriented development will assist in focusing these types of developments in areas more appropriate for their particular use and encourage the expansion of mass transit by directing more intensive uses to areas along transit lines.

CLARK COUNTY'S MIXED-USE DEVELOPMENT REGULATIONS

Clark County's Mixed-Use Overlay District encourages "a diversity of compatible land uses, including a mixture of residential with a minimum of one or more commercial, office, educational, institutional, or other appropriate urban uses."⁴³ The overlay provides a mechanism to encourage new housing and innovative urban designs less dependent on the use of automobiles. The Clark County Mixed-Used Overlay District consists of four distinct sub-districts, MUD-1, MUD-2, MUD-3, and MUD-4. Each sub-district permits specific development standards and design criteria intended to promote community goals and objectives, including intensity and density for the appropriate urban form. All mixed-used developments have compatible height features, use transitioning, landscaping, and setbacks whenever adjacent to residential use (see Map 14 below).⁴⁴

In May 2007, Clark County adopted an ordinance establishing Mixed-Use development incentives and corresponding density bonuses to encourage specific urban uses. For the purpose of implementing the incentives, Clark County defined 'walking distance' as "one quarter (1/4) mile (plus or minus ten percent (10%) of one thousand three hundred twenty (1,320) linear feet)."⁴⁵ The approved ordinance included the following as possible incentive and bonus eligible projects:

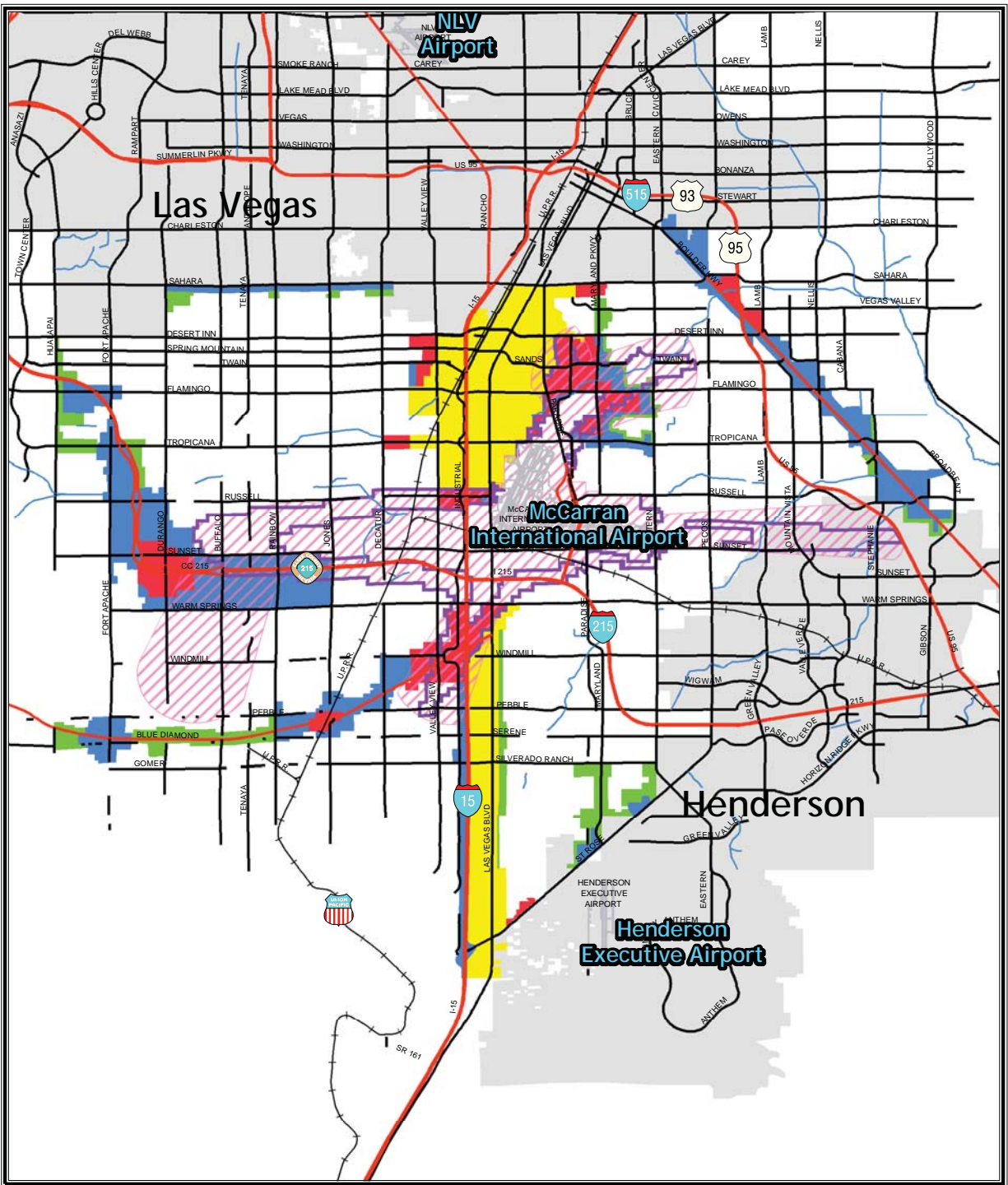
- Development located within walking distance along the nearest pedestrian access to a developed or planned transit stop (Regional Transportation Commission).
- Eligible for a density bonus up to twenty percent (20%).
- A minimum one hundred (100) space Park and Ride facility and program within walking distance along the nearest pedestrian access to a developed or planned transit stop (Regional Transportation Commission).
 - Eligible for a density bonus up to ten percent (10%).
 - An additional one percent (1%) bonus for every additional ten (10) Park and Ride spaces over the first one hundred (100) spaces (may be permitted) up to a maximum of twenty percent (20%) bonus (two hundred(200) Park and Ride Spaces).

⁴³ Clark County Comprehensive Planning Website (June 26, 2007)

⁴⁴ Ibid

⁴⁵ Ibid

Map 14: Clark County Mixed Use Overlay District



Mixed Use (legend)

- MUD 1 Most intense urban form
- MUD 2 Most intense suburban form
- MUD 3 Moderately intense suburban form
- MUD 4 Least intense suburban form
- Major Flight Corridor
- Incorporated Cities
- AE-65

Adopted June 21, 2006; Effective July 6, 2006

Mixed Use Overlay District

Las Vegas Valley
(Appendix G, Map 15a)



0 1 2 Miles

This information is for display purposes only.
No liability is assumed as to the accuracy
of the data delineated herein.

Plot Created on : June 30, 2006
\\ccgis1\gisdata\prds\zn\projects\zn0501\mud8x11.mxd

Source: Clark County Comprehensive Planning website, Ordinance 3411 (July 5, 2006)



- Grocery store (or other similar retail use with six thousand (6,000) square feet or more of grocery sales area) within the project, or within walking distance along the nearest pedestrian access to an existing grocery store.
 - Eligible for a density bonus up to twenty percent (20%).
- Continuous street frontage from one intersecting street to another (minimum six hundred (600) linear feet)
 - Eligible for a density bonus up to twenty percent (20%).
- In addition to the required open space providing a publicly accessible plaza area of one and one half (1.5) acres or more.
 - Eligible for a density bonus up to one hundred (100) units for the first acre of the project.
 - Up to fifty (50) units for each additional acre up to two hundred fifty (250) units.
- Fifteen (15) feet wide or larger supplemental pedestrian area (beyond what is required).
 - Eligible for a density bonus up to twenty percent (20%).
- Development located within one thousand three hundred and twenty feet (1,320') of the University of Nevada Las Vegas campus.
 - Eligible for a density bonus up to thirty percent (30%).

Clark County did limit the maximum density within MUD-4 not to exceed thirty-two (32) dwelling units per acre.

COMPARISON OF TRANSIT SUPPORTIVE DENSITIES

Compact residential and employment densities are the single most important factor associated with transit use. The greater the number of people living and working near a transit system, the greater the potential ridership on that system. Differences in densities and land development characteristics will dictate the type of transit system most appropriate for the corridor or region. As illustrated in Maps 15-17, densities for local bus service (similar to CAT) compared to more frequently operated routes (express or BRT), or light rail require different intensities of residents and employees per acre to sufficiently support that particular system.

In 2002, Parsons (RTC Consultant) analyzed several major corridors to determine the transit mode best suited for the specific region. Many alternative transit possibilities were exam-



ined including on-street bus operations, buses on exclusive bus lanes or right-of-ways, bus rapid transit, at-grade and grade separated light rail transit, heavy rail to include commuter rail and rapid transit services, and automated guideway transit. According to Parsons, all the aforementioned transit options suited the size, characteristics, and densities of the Las Vegas area, except for long-distance commuter rail and rapid transit (Northern California Bay Area Rapid Transit, or Washington, D.C. Metro).⁴⁶

As indicated in Tables 10 and 11, the transit option best suited for a particular corridor was analyzed based on its physical opportunities/constraints, transportation conditions, land development characteristics, and relative benefit/cost. Sahara Avenue appeared best suited for a BRT route because of the strong benefit/cost ratio with ridership gains approaching those of more costly fixed guideway alternatives. Existing right-of-way also appeared available with little disruption to adjacent land uses and existing traffic flow. Summerlin Parkway appeared best suited for enhanced bus service, with a relatively low capital cost and a high benefit/cost ratio.⁴⁷ Rancho Drive appeared best suited for enhanced bus service, even though the benefit/cost ratio for a BRT service deployment would be slightly higher, the anticipated increase in ridership did not warrant the additional investment. Furthermore, to accommodate a BRT route on Rancho Drive, additional capacity would need to come from grade separated intersections, eliminating homes on the west side between Vegas Drive and Washington Avenue, and an elevated four-lane viaduct along Bonanza between Rancho Drive and Martin Luther King Boulevard. The estimated costs for the road improvements alone were estimated at \$500 million dollars.

Besides summarizing the recommended transit option best suited for each corridor, Parsons researched and identified the transit characteristics for existing bus, enhanced bus, Bus Rapid Transit, light rail transit, and automated transit services for the applicable corridor separately on Tables 12-16, facilitating comparison of each corridor to the specific type of transit service.

COMPARISON OF LIGHT RAIL TO BRT SYSTEMS

Comparing the service and cost/benefit ratio of transit services within or between cities is difficult due to the differences in available right-of-way, environmental obstacles, existing development, utilities, and climate provisions (such as snow and ice in northern regions). A BRT system is not a single type of transit system; rather it encompasses a variety of approaches such as buses using exclusive busways or HOV lanes with other

⁴⁶ *Las Vegas Valley Transit System Development Plan (Parsons, 2002)*

⁴⁷ *Ibid*

vehicles, and improving bus service on city arterial streets, each varying considerably in the capital cost per mile. Exclusive busways can be totally separate roadways or operate within highway rights-of-way separated from other traffic by barriers, and usually have the highest capital cost per mile, averaging \$13.5 million per mile in 2000 dollars.⁴⁸ Buses on HOV lanes travel on limited-access highways designed more for the long-distance commute, and have capital costs averaging \$9.0 million per mile (includes the cost of HOV lanes, bus stations, park-and-ride facilities, and additional vehicles). Bus Rapid Transit systems using arterial streets may include lanes reserved exclusively for buses with street enhancements that speed buses and improve service, with the lowest cost averaging \$680,000 per mile. Los Angeles completed two BRT routes on arterial roadways without using dedicated right-of-way at a cost of \$200,000 per mile, which included the cost of signal prioritization, improved stations, and real-time information systems (no new vehicles). The more extensive the construction, the higher the costs as in Orlando, Florida where their arterial BRT route averaged \$9.6 million per mile (including the costs of lane construction and new vehicles).⁴⁹

Light rail transit (LRT) is a metropolitan-electric railway system characterized by its ability to operate in a variety of environments such as streets, subways, or elevated structures. It can currently be found in 13 different cities (includes Baltimore, Buffalo, Dallas, Denver, Northern New Jersey (Hudson and Bergen counties), Los Angeles, Pittsburgh, Portland, Sacramento, San Diego, San Jose, St. Louis, and Salt Lake City), and averages \$34.8 million per mile (ranging from \$12.4 million to \$118.8 million when escalated to 2000 dollars) in capital costs. These costs can include stations, structures, signal systems, power systems, utility relocation, right-of-way, maintenance facilities, transit vehicles, and project oversight.

As illustrated in Chart 5, when comparing the capital costs per mile for light rail to bus rapid transit, light rail is considerably higher. These higher costs are attributed to elements not required for BRT projects, such as train signals, communications, and electrical power systems with overhead wires to deliver power to the trains. In addition, if a LRT maintenance facility does not exist, one must be built and equipped. Finally, light rail vehicles are substantially higher in cost than buses – about \$2.5 million each compared to \$420,000 for higher capacity buses, or more than \$1 million per bus for those utilizing new technologies for low emissions, or that run on more than one type of fuel.⁵⁰ Regardless of the transportation mode-bus or rail- projects requiring tunneling or elevated structures are more expensive than surface level construction.

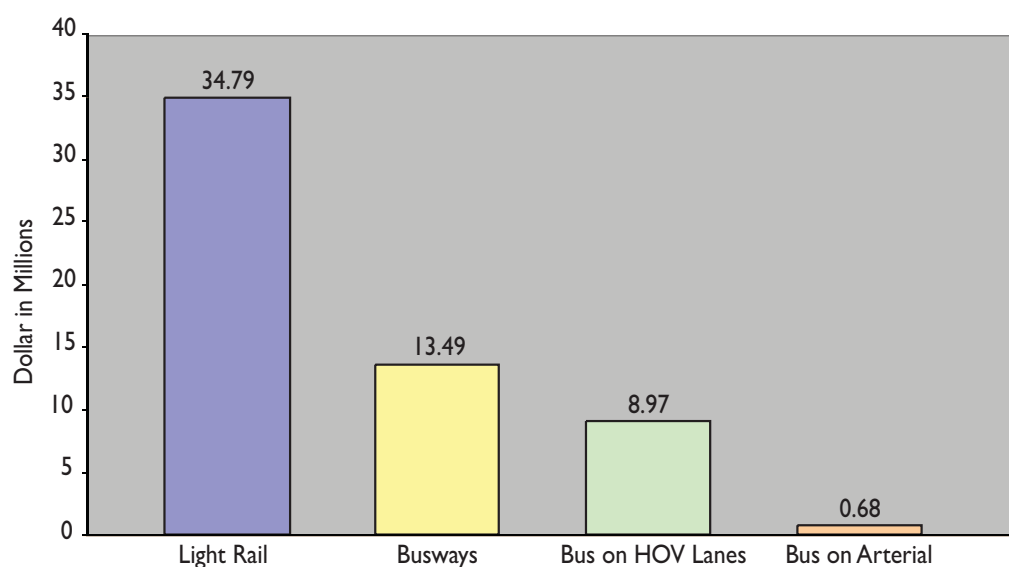
48 *Mass Transit- Bus Rapid Transit Shows Promise*(United States General Accounting Office, September, 2001)

49 *Mass Transit- Bus Rapid Transit Shows Promise*(United States General Accounting Office, September, 2001)

50 *Ibid*

Ridership comparisons on BRT and LRT systems varies widely depending on the frequency of service, number of stops, hours of operation, and customer demand. According to an analysis conducted by the U.S. General Accounting Office of FTA and transit agency data (illustrated in Chart 6), ridership on four busways ranged from 7,000 to 30,000 per day, averaging about 15,600 riders per day. For 13 bus lines on HOV lanes, ridership ranged from 1,000 to 25,000 riders per day, or an average of 8,100 riders per day. Ridership on two BRT arterial streets in Los Angeles ranged from 9,000 to 56,000 per day, averaging 32,500 riders per day. Ridership on 18 Light Rail lines ranged from 7,000 to 57,000 riders per day, or averaged about 29,000 per day, the largest being on Los Angeles' Blue Line.⁵¹

Chart 5: Capital Cost per Mile for Light Rail and Bus Rapid Transit



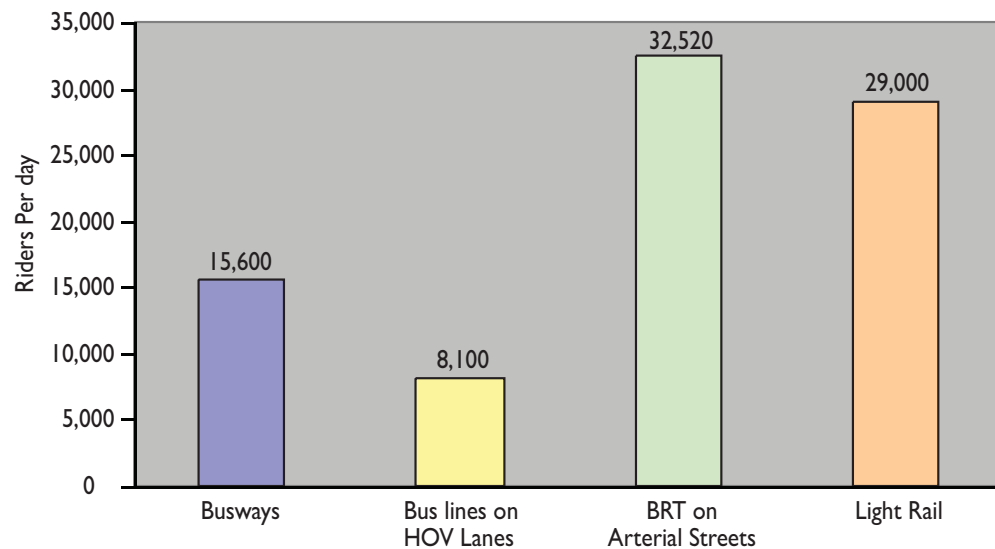
Note: Cost escalated to fiscal year 2000 dollars.

Average Light Rail capital costs are for 13 cities that built 18 Light Rail lines since 1980. Busway capital costs are for nine busways built in four cities; in two cities these facilities were subsequently opened to private vehicles as HOV lanes. Capital costs for buses using HOV lanes are for eight HOV facilities in five cities. Capital costs for buses on arterial streets are for three lines in two cities.

Source: GAO analysis of FTA and transit agency data (September, 2001)

⁵¹ Ibid

Chart 6: Comparison of Ridership of BRT to LRT Systems



Source: GAO analysis of FTA and transit agency data (September, 2001)

Bus rapid transit and light rail systems each serve in providing transportation options to a community, given the appropriate situations and cost. The Transportation Research Board in Washington, D.C. published an article citing the qualities and differences of BRT and LRT systems. The article affirms that bus service is best for serving areas with more dispersed population and employment and lower demand: rail is best serving corridors where destinations are concentrated, such as large commercial centers and mixed-use urban villages. Rail tends to attract more riders in a given area, but buses cover broader areas. Both modes can become effective and efficient at achieving planned objectives if implemented with supportive policies that improve service quality, create supportive land use patterns and encourage ridership. Adding a LRT component to a transit system can encourage more people to use both bus and rail transit. Additionally, LRT trunk lines coordinated with a region's bus service can create a multi-modal, multi-destination transit system resulting in growth for both modes- even in low-density, auto-oriented areas.⁵²

ALTERNATIVE TRANSPORTATION MODES

In July 2005, the City adopted the Land Use Element which includes a new land use category for the Traditional Neighborhood Development (TND). The primary emphasis of the TND is on creation of mixed-use pedestrian-oriented neighborhoods that incorporate facilities along streets for pedestrians, bicycles and transit. The TND utilizes an interconnected grid of streets that de-emphasizes gated private streets and cul-de-sacs; while emphasizing strong relationships between

⁵² "This is Light Rail Transit" (Transportation Research Board, November 2000)

streets and buildings, and discouraging perimeter walls along roadways. With similar objectives in mind, RTC has focused on incorporating “Smart Growth” principles emphasizing development with desirable places to walk and/or bike. These principles promote calmer streets, fewer driveways, better access to transit, and a de-segregation or re-mixing of land uses within developments with a resultant increase in use of alternative transportation modes, such as walking, biking and transit. Thus far, RTC and local entities have joined forces to widen sidewalks, increase landscaping, reduce driveway openings at developments, and add over 1,750 miles of adopted on-street bikeways and 660 off-street shared use trails.⁵³

The city’s Urban Pathway System, a system of linkages bolstering the integration of uses and design characteristics of the downtown area, connects various cultural activities and amenities via pedestrian friendly corridors and trails. Numerous attractions and amenities such as those found in Historic West Las Vegas, at the Las Vegas Springs Preserve, Union Park, Neon Bone-yard, Wright Plaza, Glitter Gulch, Lloyd George Plaza, Las Vegas Academy of Performing Arts, and many more are located along the pathways. A network of both cultural and recreational pathways are proposed, consisting of amenities such as the widening of sidewalks, well-designed streetlamps, banners, occasional trees, benches, and trash receptacles. The recreational linkages could include tot lots, human chess, handball courts, small fenced areas for doggy aerobics, and possibly putting areas. Establishing a network of urban trails, and open spaces with linkages to transit will help entice more people to experience Downtown Las Vegas in its entirety.

A well integrated system of urban pathways and trails that are connected to pedestrian and bicycle friendly mixed use area throughout the city will provide viable and safe transportation alternatives that link residential areas to a variety of public facilities, attractions and destinations. Connecting this pathway system to transit will further enhance the opportunities for both residents and visitors to choose options other than the automobile to meet their transportation needs.

Another alternative transit mode utilized successfully in many large cities throughout the world is the subway. Subways are high speed urban mass transit systems located below ground, thereby keeping the surface streets above free of tracks and stations. Because subway trains are not hampered by surface level traffic, they operate at relatively high speeds, making travel quicker than by car and most other transit options. As urban populations increase, so does congestion on the roadways. Subway systems may be a viable solution where dense concentrations of population have resulted in levels of

53 Regional Transportation Plan FY 2006-2030 (RTC, October 2006)

congestion in the transportation network that are not easily remedied through expansion of roadway capacity. In some circumstances, the availability of land and/or the cost to acquire or build additional capacity can become prohibitive or technically infeasible. Subway systems are arguably the least land consumptive of all transit modes, as they have relatively minimal impacts on the surface with limited entry and exit points providing access into the subway network. Although disruptive during construction, subway stations create concentrations of people, which benefits surrounding businesses.

AMENITIES/BUS STOPS

Safety concerns, perceived comfort, climatic conditions, design of transit stops, and station amenities all play a significant role in transit patronage. The transit stop is the first image many passengers have of the system, and is an important piece of “street furniture” that is part of the public realm at the neighborhood scale. Therefore, transit stops should be easily recognized, identifiable from a distance, and have amenities that enhance customer safety, comfort, and complement neighborhood streetscapes. Information on how to use the system, its routing, scheduled pickup time, and required fare should be readily available and easily understood.

The Metropolitan area of Las Vegas has 3,706 active bus stops, 1,306 of which are located within the city’s jurisdiction. Approximately 386 stops have no amenities, and another 392 have only a single bench.⁵⁴ Consistent bus stop signage is also lacking within the city. Some signs are located on light or power poles, others on bus shelters, yet others on single poles, causing confusion on the part of customers attempting to find a bus stop. Temperatures in Las Vegas during the summer months frequently soar above 110 degrees. Without adequate shade structures at bus stops, the customer is left exposed to the elements. Many existing amenities are in disrepair, have been vandalized, or are otherwise unsightly, necessitating replacement or refurbishing.

RTC assumed responsibility for the construction, maintenance, and installation of bus stop amenities on June 17, 2005, with the passage of Assembly Bill 239 of the NRS, Chapter 373. In 2006, RTC competitively bid and procured a single franchisee to assume responsibility for bus stop amenities. Though RTC is currently negotiating an agreement with the franchisee, their ultimate goal is to have at minimum a lit shelter at each bus stop location. Additionally, they have forecasted funding for shelter program enhancements such as Ticket Vending machines (TVM), signage, landscaping, amenities, security cameras, related sidewalk improvements, and real-time “Next bus”

⁵⁴ *Bus Stop Location Summary; Regional Transportation Commission (April 30, 2007)*

sign technology, which displays the expected arrival time of the bus at that particular bus stop. By improving the aesthetics, comfort, convenience, and safety of transit stops, an increase in transit patronage is likely.

IMPLEMENTATION

The Master Plan outlines a vision for the city's future that can only be implemented incrementally over time. The challenge of any long-range municipal plan is to remain relevant and useful throughout its lifecycle. One of the main implementation tools for the master plan is the Capital Improvement Plan (CIP). The CIP is a fiscal and management tool the city uses to allocate its resources. A concentrated effort to coordinate capital improvement projects is necessary to ensure long-range planning and budgeting is linked cohesively and efficiently. This element should be used by the city as a resource during the CIP process. The information contained in this document can assist in guiding decisions on where to support transit and associated amenities to best meet the needs of a growing metropolis.

The recommendations below were developed from multiple levels of analysis detailed in previous sections of this element and are intended to be comprehensive, taking into account the transit needs of residents and visitors, current conditions, future transit expenditures, and traffic mitigation alternatives. As a vision for the future, it is acknowledged that the Master Plan must be flexible and adjustments made periodically to adapt to changing political, economic, and social conditions. This element provides a comprehensive analysis of the transit systems and associated amenities within the city, and acts as a guide for decision makers to use when determining, prioritizing, and allocating resources for future projects. Recommendations and corresponding actions related to transit are provided below.

RECOMMENDATION I: ALIGN PLANS, POLICIES AND DEVELOPMENT CODES TO SUPPORT MASS PUBLIC TRANSPORTATION

The city is in the process of amending Title 19 to incorporate revised mixed-use zoning requirements and transit-oriented development standards to facilitate mass transit. Local land use plans, policies and development standards should promote transit development and usage employing smart growth principles in newly developing areas, while preserving, strengthening, and revitalizing existing neighborhoods. Barriers, including community perimeter walls, and non-pedestrian friendly street designs that restrict access to transit should be avoided or prohibited where warranted. Connections between transit,



urban pathways, parks, schools and other destinations should be required. A new zoning category and standards for park-and-ride facilities should be created.

ACTIONS

- Ensure all local land use plans and regulations are consistent with the transit-oriented plan for the region
- Adopt transit-oriented development (TOD) principles and design standards for planned communities to facilitate alternative transportation options
- Require higher densities and mixed-land uses in transit corridors and other appropriate locations designed with pedestrians, bicyclists and transit in mind
- Integrate smart growth policies to encourage efficient use of land and infrastructure supportive of compact mixed-use development forms that reduce dependency on auto travel and provide multi-modal transportation choices
- Adopt transportation policies that elevate the priority of transit in order to promote and sustain the positive effects of a well integrated transit system on land use
- Adopt standards and guidelines for locating and developing park-and-ride facilities and potential accessory uses
- Coordinate planning and location of existing and future public buildings and facilities with transit.

RECOMMENDATION 2: CONTINUED SUPPORT AND PARTICIPATION IN TRANSIT PROJECT PLANNING THROUGH COMMITTEE MEMBERSHIP

The city voices concern and/or support on issues regarding new transportation projects, roadway improvements, and transit through its membership on several committees. Strategies addressing key issues and the review of a broad range of transportation systems, mass transit, and fair and adequate transportation funding, set regional and local policies that shape the city's future.



ACTIONS

- Cooperate with the RTC, local entities, and private developers to improve and develop a multimodal transportation system, which includes bus rapid transit, light rail systems, the regional fixed guideway bicycle and pedestrian facilities and linkages
- Support and promote RTC's efforts to establish a Joint Development Program (JDP) to secure the most appropriate private and/or public sector Transit Oriented Development projects
- Support and coordinate with and local entities and private entities to facilitate the development of the maglev train system in downtown Las Vegas

RECOMMENDATION 3: SEEK FUNDING OPPORTUNITIES TO ASSIST WITH TRANSIT AND AMENITY DEVELOPMENTS WITHIN THE CITY OF LAS VEGAS

The city's capital improvements program contains funding based on a five-year horizon, which is updated annually. Projects approved through the CIP process represent the approved priority list for spending capital funds. It is recommended that transit and amenity developments requiring capital expenditures be closely coordinated with RTC and through the capital improvements program so that budgeting and transit planning priorities are linked logically and efficiently.

ACTIONS

- Consider allocating all or a portion of the bus stop franchisee fee revenues received from the RTC for improving and enhancing transit amenities in the city
- Coordinate with RTC on proposed routes and amenities for funding sources and/or funding allocation, ensuring new projects allow alternative transportation modes such as center-running bus rapid transit or light rail transit
- Support legislative changes and funding initiatives that support transit system development within the city
- Support funding initiatives that encourage city employees' use of transit

RECOMMENDATION 4: COORDINATE IMPROVEMENT OF THE DESIGN, AVAILABILITY, FUNCTIONALITY, AND “PASSENGER FRIENDLINESS” OF BUS STOP AMENITIES

Upgraded transit amenities can help to instill rider confidence in the transit agency as well as help beautify city streets. The programmed placement of new amenities throughout the city is insufficient to meet current and future demand. The city should advocate accelerating amenity improvements and seeking funding opportunities to assist with amenity upgrades.

ACTIONS

- Work with transit providers to improve and expand the transit route and signage program by showing connections with urban pathways, and major attractions such as schools, museums, institutions, shopping and recreation areas
- Encourage consistency in color, logo, and the type of amenities throughout the system, thereby producing a “branded” sense of identity at bus stops and transit hubs
- Identify and provide street furniture that enhances the experience of the riding transit
- Re-evaluate the development review criteria for improving transit access as part of the initial construction documents to include sidewalk access, transit stop enhancements, and accessibility
- Research and support a community based economic redevelopment effort centered on turning individual bus stops into places constructed and maintained by the community
- Involve the local arts community and youth in the design of transit amenities



RECOMMENDATION 5: COORDINATE THE PLANNING AND DEVELOPMENT OF PARK- AND-RIDE FACILITIES

In view of expanding and enhancing transit service, RTC has studied potential locations and secured funding to develop several park-and-ride facilities, which currently do not exist in the city. Additionally, the city is working with a private investor and the RTC on a prospective joint-use park-and-ride location within an emerging planned community in the northwest.

ACTIONS

- Coordinate with RTC, local entities, and developers to integrate park-and-ride spaces into proposed multiple use and transit oriented projects
- Encourage public involvement in planning future park-and-ride locations
- Participate in evaluating broad policy issues, formulating goals and objectives, system level measures of effectiveness, operational goals and responsibilities, and generalized location decisions regarding park-and-ride facilities
- Support park-and-ride facilities through local funding

CONCLUSION

The city has invested over 83 million dollars during the last ten years on public infrastructure projects in the downtown area. Numerous high and mid-rise condominiums and offices have been built, and are under construction or in the planning stages. New cultural, entertainment and shopping venues are expected to attract local residents as well as visitors. This resurgence of activity downtown, anticipated to bring thousands of new residents, workers and visitors to the central city, has prompted city officials to seek alternative transportation solutions that will help ameliorate the demand for increased capacity on the streets and highways serving the city. Impacts on air quality, water quality, and energy costs are also transportation related issues for which creative solutions must be found. Provision of efficient, innovative mass transit is a key component in the strategy needed to ensure long range success and sustainability of the city's revitalization and continued growth.

As the city continues to thrive from its core to its outer edges, the need to plan for and provide an efficient multi-modal transportation system becomes more critical. To sustain the City's enviable economic prosperity and quality of life, upgrading and expanding the existing transit system with a new generation of transit vehicles, facilities, and amenities that reflect neighborhood characteristics are paramount. Focused effort and creativity are required to design transit improvements and amenities that will enhance the user's personal experience, offer comfortable walk and wait environments for customers, and contribute to a healthier society overall. An array of strategies and solutions, such as effective mixed-use and transit oriented development codes, should be adopted to effectively integrate a network of transportation facilities to meet present and future needs of existing communities and newly developing areas.

New strategies could also include development incentives and density bonuses to encourage specific urban uses within newly developing areas, or where infill development occurs, take advantage of opportunities to create pedestrian, bicycle and transit linkages. In addition, the city should continue to seek opportunities to invest in transit through public-private partnerships and regional coordination.

The Transit Element will serve to assist city officials in setting a foundation for the city's role in public transit, and provide guidance for implementing a highly successful multimodal transportation system that helps shape the city's future. This element will further serve to strengthen the link between capital improvement programming and the Master Plan by providing a baseline of information regarding existing conditions and analyses of future transit system needs and options.

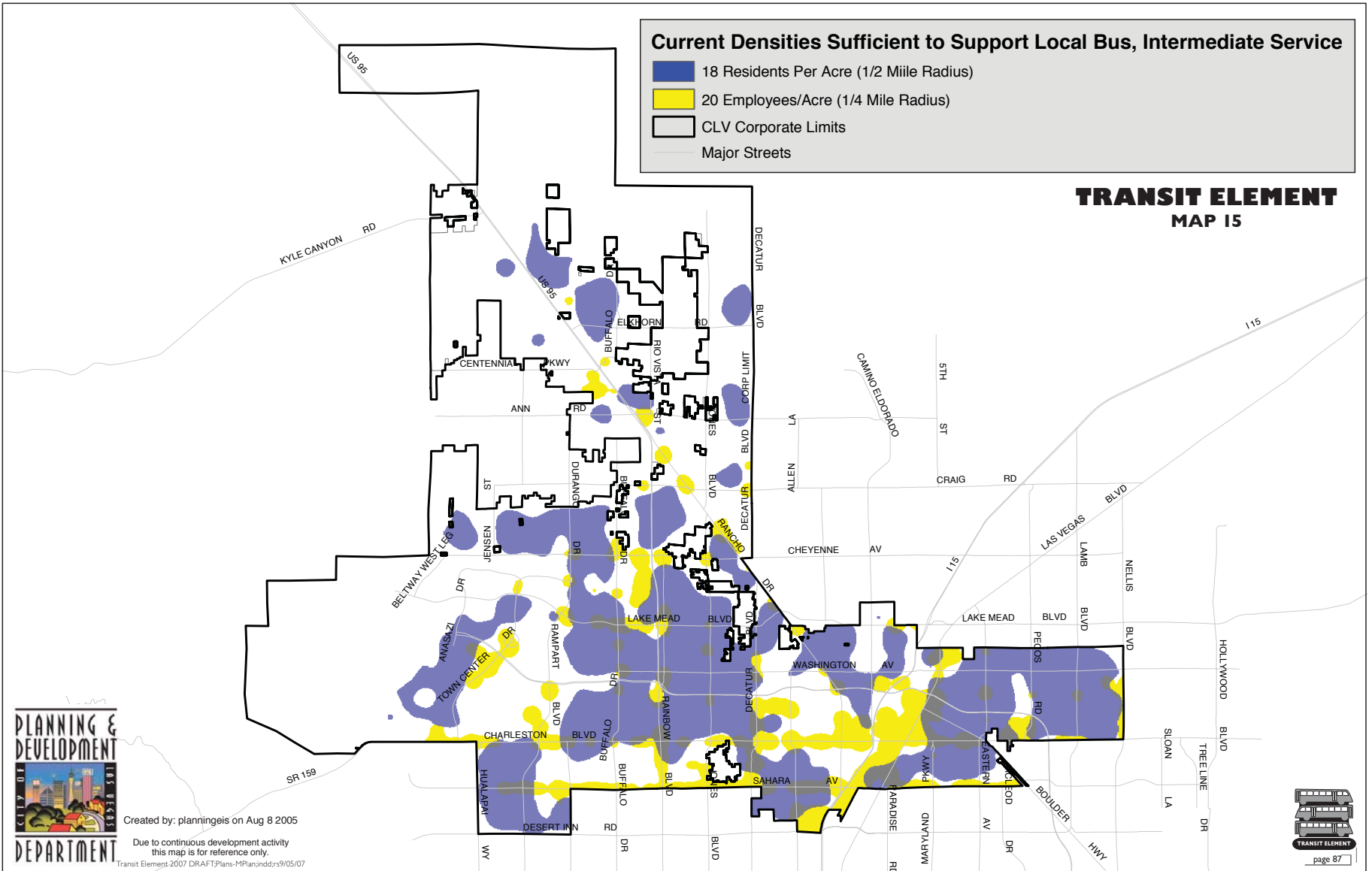


The information contained in this element can be integrated with the City's Strategic Plan and inform the Capital Improvement Plan decision making process as opportunities to coordinate transit related projects and funding strategies with relevant agencies and transit providers are discovered. The ultimate objective is for the City to provide leadership and vision to achieve a high level of coordination and collaboration in the planning and development of a world-class mass transit system that will foster long term economic and environmental sustainability throughout the city.

Current Densities Sufficient to Support Local Bus, Intermediate Service

- 18 Residents Per Acre (1/2 Mile Radius)
- 20 Employees/Acre (1/4 Mile Radius)
- CLV Corporate Limits
- Major Streets

TRANSIT ELEMENT MAP 15



Created by: planninge on Aug 8 2005
Due to continuous development activity
this map is for reference only.
Transit Element 2007 DRAFT\Plans-M\Plan\indd\rs9\05\07



blank-back of map

Current Densities Sufficient to Support Local Bus, Frequent Service

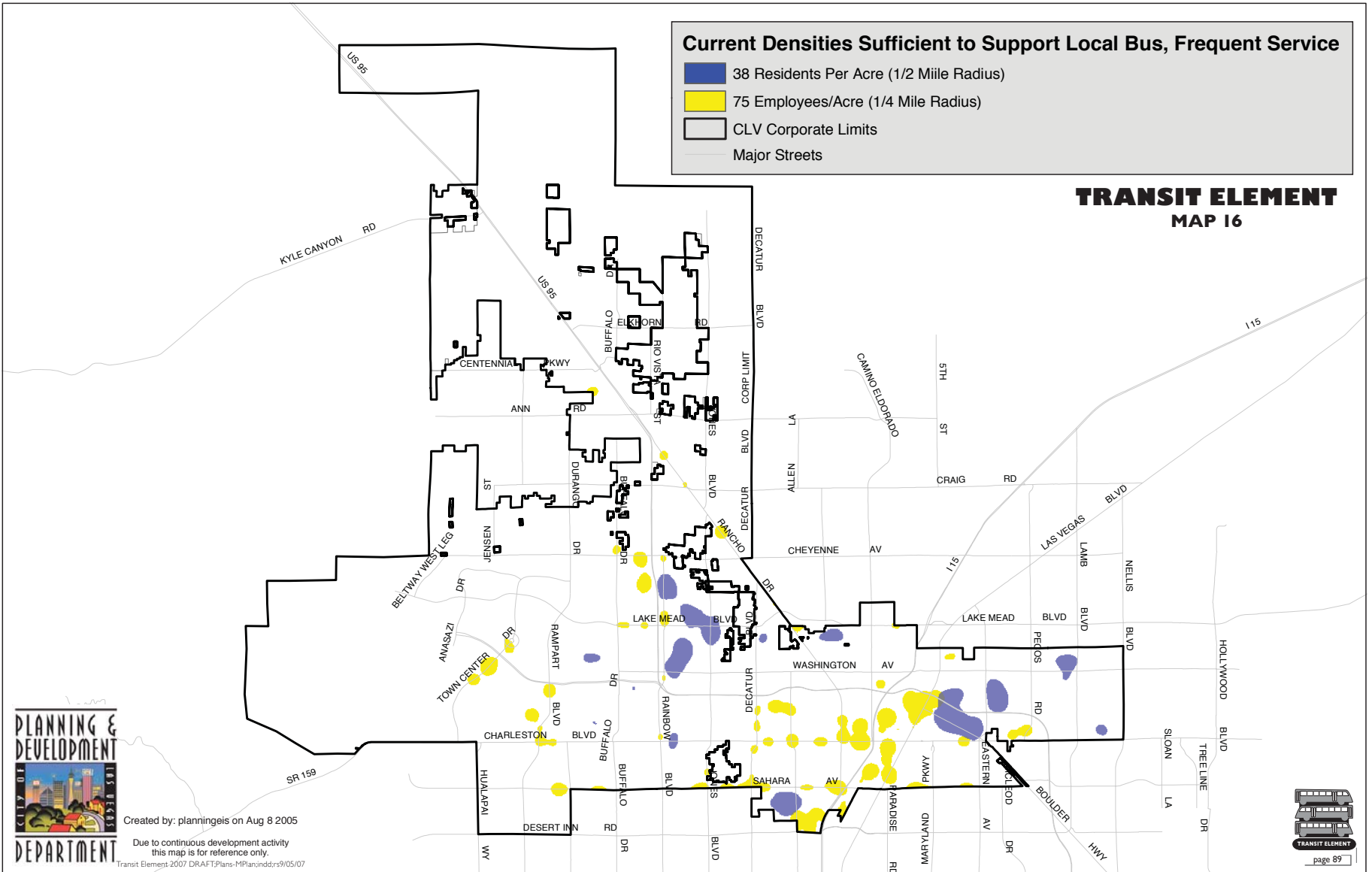
38 Residents Per Acre (1/2 Mile Radius)

75 Employees/Acre (1/4 Mile Radius)

CLV Corporate Limits

Major Streets

TRANSIT ELEMENT MAP 16



Created by: planninge on Aug 8 2005

Due to continuous development activity
this map is for reference only.

Transit Element 2007 DRAFT: Plans-M: PlanInddr: 9/05/07



blank-back of map

 23 Residents Per Acre (1/2 Mile Radius)
 125 Employees/Acre (1/4 Mile Radius)
 CLV Corporate Limits
 Major Streets



TRANSIT ELEMENT

page 9

page 91

PLANNING &
DEVELOPMENT
CITY OF LOS ANGELES
DEPARTMENT

Created by: planningeis on Aug 8 2005

Due to continuous development activity
this map is for reference only.

Transit Element 2007 DRAFT;Plans-MPlan;indd;rs9/05/07



blank-back of map

Table 10: Relative Benefit/Cost Analysis of Las Vegas Transit Corridor Investment Alternatives

Mode	Travel Time Savings		Annual Capital Cost	Net Annual Operating Cost	Relative Benefit/Cost Ratio	2005 Ridership	Ridership Increase
	In-Vehicle	Out-of Vehicle					
Sahara	Existing		406,000	1,293,000	0.00	2,610,000	
	Enhanced Bus	0	1,958,000	3,511,000	0.58	3,002,000	15.0%
	BRT	4,451,000	9,237,000	4,985,000	0.66	3,726,000	42.8%
	LRT	6,555,000	52,183,000	8,174,000	0.19	4,028,000	54.3%
	AGT	6,701,000	93,961,000	6,344,000	0.10	3,824,000	46.5%
Boulder	Existing		580,000	2,083,000	0.00	3,364,000	
	Enhanced Bus	0	1,217,000	2,390,000	0.34	3,515,000	4.5%
	BRT	1,289,000	10,653,000	3,228,000	0.28	3,639,000	8.2%
	LRT	2,900,000	25,739,000	6,285,000	0.17	3,722,000	10.6%
Maryland	Existing		638,000	1,845,000	0.00	4,277,000	
	Enhanced Bus	0	1,171,000	1,845,000	0.00	4,277,000	0.0%
	BRT	1,909,000	4,878,000	1,774,000	0.29	4,491,000	5.0%
	AGT	23,557,000	41,105,000	2,147,000	0.54	8,752,000	104.6%
Henderson	BRT	New Service	15,596,000	323,000	0.00	1,125,000	New Service
	LRT	New Service	5,328,000	1,058,000	0.00	1,222,000	New Service
Beltway	Enhanced Bus	New Service	406,000	2,166,000	0.00	404,000	New Service
Desert Inn	Existing		348,000	1,073,000	0.00	1,241,000	
	Enhanced Bus (1)	0	1,132,000	1,679,000	0.00	2,806,000	126.1%
	Enhanced Bus (2)	0	2,927,000	3,179,000	0.36	3,086,000	148.7%
	BRT	3,278,000	9,222,000	3,493,000	0.60	3,844,000	209.8%

Table 10: Relative Benefit/Cost Analysis of Las Vegas Transit Corridor Investment Alternatives, continued

Mode	Travel Time Savings		Annual Capital Cost	Net Annual Operating Cost	Relative Benefit/Cost Ratio	2005 Ridership	Ridership Increase
	In-Vehicle	Out-of Vehicle					
Flamingo	Existing		464,000	1,379,000	0.00	3,350,000	
	Enhanced Bus	0	1,654,000	2,499,000	0.31	3,669,000	9.5%
	BRT	5,250,000	7,606,000	2,995,000	0.77	4,409,000	31.6%
	LRT	9,070,000	56,414,000	6,538,000	0.20	4,980,000	48.7%
	AGT	8,238,000	95,091,000	5,013,000	0.10	4,622,000	38.0%
Rainbow	Existing		348,000	1,109,000	0.00	1,123,000	
	Enhanced Bus	0	1,328,000	1,703,000	0.29	1,225,000	9.1%
Rancho	Existing		406,000	1,281,000	0.00	882,000	
	Enhanced Bus		1,390,000	3,059,000	0.25	1,027,000	16.4%
	BRT	1,616,000	6,807,000	2,950,000	0.34	1,294,000	46.7%
Summerlin	Existing		232,000	1,018,000	0.00	426,000	
	Enhanced Bus		1,159,000	4,593,000	0.86	1,847,000	333.6%
Tropicana	Existing		811,000	2,017,000	0.00	3,713,000	
	Enhanced Bus	0	1,789,000	2,218,000	0.34	3,958,000	6.6%
	BRT	1,600,000	8,620,000	3,925,000	0.38	4,597,000	23.8%
	LRT	1,628,000	37,571,000	9,865,000	0.10	4,675,000	25.9%
	AGT	5,660,000	95,149,000	4,906,000	0.08	4,865,000	31.0%

Source: Las Vegas Valley Transit System Development Plan (Parsons, 2002)

Table II: Summary Characteristics of Recommended Transit Modes)

TRANSIT CHARACTERISTICS	SAHARA	BOULDER	MARYLAND	HENDERSON BRANCH	BELTWAY	DESERT INN	FLAMINGO	RAINBOW	RANCHO	SUMMERLIN	TROPICANA
	BRT	BRT	AGT	LRT	ENHANCED BUS	ENHANCED BUS (2)	BRT	EXISTING BUS	ENHANCED BUS	ENHANCED BUS	ENHANCED BUS
Route Miles	16.7	15.6*	7.1*	11.1	45	20.7	12.8	11.5	10.0	40	12.8
Mixed Traffic	2.0	2.0	0	0	45	20.7	5.7	11.5	10.0	40	12.8
Exclusive:											
At-Grade	14.7	5.2	0	11.1	0	0	7.1	0	0	0	0
Above Grade	0	0	5.6	0	0	0	0	0	0	0	0
Below Grade	0	0	0	0	0	0	0	0	0	0	0
Total Transit Vehicles Including Spares	18	15	27	3	7	17	15	6	11	20	14
2025 Annual Ridership	3,726,000	3,639,000	8,752,000	1,222,000	404,000	3,086,000	4,409,000	1,123,000	1,027,000	1,847,000	3,958,000
Increase in Ridership	42.8%	8.2%	104.6%	New Service	New Service	148.7%	31.6%	-	16.4%	333.8%	6.6%
Capital Cost (2002 \$)	\$101,315,000	\$118,767,000	\$518,859,000	\$69,034,000	\$3,220,000	\$28,480,000	\$83,489,000	\$2,760,000	\$13,060,000	\$9,200,000	\$16,840,000
Annualized Capital Cost (2002 \$)	\$9,237,000	\$10,653,000	\$41,105,000	\$5,328,000	\$406,000	\$2,927,000	\$7,606,000	\$348,000	\$1,390,000	\$1,159,000	\$1,789,000
Annualized Capital Cost per Rider (2002 \$)	\$2.48	\$2.93	\$4.70	\$4.36	\$1.00	\$0.95	\$1.73	\$0.31	\$1.35	\$0.63	\$0.45
Annual Operating Cost (2002 \$)	\$6,540,000	\$4,633,000	\$5,071,000	\$1,546,000	\$2,283,000	\$4,551,000	\$5,084,000	\$1,595,000	\$3,480,000	\$6,468,000	\$3,983,000
Annual Fare Revenue (2002 \$)	\$1,555,000	\$1,405,000	\$2,923,000	\$489,000	\$117,000	\$1,372,000	\$2,089,000	\$486,000	\$421,000	\$1,876,000	\$1,765,000
Net Operating Cost	\$4,985,000	\$3,228,000	\$2,147,000	\$1,058,000	\$2,166,000	\$3,179,000	\$2,995,000	\$1,109,000	\$3,059,000	\$4,593,000	\$2,218,000
Net Operating Cost per Rider (2002 \$)	\$1.34	\$0.89	\$0.25	\$0.87	\$5.36	\$1.03	\$0.68	\$0.99	\$2.98	\$2.49	\$0.56
Travel Time Savings (2002 \$)	\$9,397,000	\$3,866,000	\$23,557,000	New Service	New Service	\$2,186,000	\$8,167,000	0	\$1,091,000	\$4,968,000	\$1,379,000
Travel Time Savings	1,105,000	455,000	2,771,000	New Service	New Service	257,000	961,000	0	128,000	585,000	162,000
Households Served (2025)	54,000	42,000	30,000	22,000	81,000	61,000	49,000	36,000	18,000	75,000	37,000
Accessible Employment (2025)	71,000	91,000	108,000	35,000	145,000	96,000	118,000	26,000	57,000	159,000	103,000
Supportive land use patterns	Medium to high	Medium	High	Medium to high	Low to medium	Medium to high	Medium to high	Low to medium	Low to medium	Medium to high	Medium to high
Concentration of commuter travel	Medium to high	High	High	Medium to high	Low	Medium to high	High	Low	Medium	Medium to high	High
Likelihood of major environmental constraints	None	None	None	None	None	None	None	None	None	None	None
Disruption of neighborhood	Apparent Little	Apparent Little	Apparent Little	Apparent Little	None	None	Apparent Little	None	None	None	None
	anticipated	anticipated	anticipated	anticipated	None	None	anticipated	None	None	None	None

Source: Las Vegas Valley Transit System Development Plan (Parsons, 2002)



Table 12: Comparison of Existing Bus Service

TRANSIT CHARACTERISTICS	SAHARA	BOULDER	MARYLAND	DESERT INN	FLAMINGO	RAINBOW	RANCHO	SUMMERLIN	TROPICANA
Route Miles	15.3	15.6	7.1	11.5	11.4	11.5	10.0	28	12.8
Mixed Traffic	15.3	15.6	7.1	11.5	11.4	11.5	10.0	28	12.8
Exclusive:									
At-Grade	0	0	0	0	0	0	0	0	0
Above Grade	0	0	0	0	0	0	0	0	0
Below Grade	0	0	0	0	0	0	0	0	0
Total Transit Vehicles Including Spares	7	10	11	6	8	6	7	4	14
2025 Annual Ridership	2,610,000	3,364,000	4,277,000	1,241,000	3,350,000	1,123,000	882,000	426,000	3,713,000
Increase in Ridership	-	-	-	-	-	-	-	-	-
Capital Cost (2002 \$)	\$3,220,000	\$4,600,000	\$5,060,000	\$2,760,000	\$3,680,000	\$2,760,000	\$3,220,000	\$1,840,000	\$6,440,000
Annualized Capital Cost (2002 \$)	\$406,000	\$580,000	\$638,000	\$348,000	\$464,000	\$348,000	\$406,000	\$232,000	\$811,000
Annualized Capital Cost per Rider (2002 \$)	\$0.16	\$0.17	\$0.15	\$0.28	\$0.14	\$0.31	\$0.46	\$0.54	\$0.22
Annual Operating Cost (2002 \$)	\$2,382,000	\$3,089,000	\$3,274,000	\$1,625,000	\$2,966,000	\$1,595,000	\$1,643,000	\$1,141,000	\$3,673,000
Annual Fare Revenue (2002 \$)	\$1,089,000	\$1,006,000	\$1,429,000	\$552,000	\$1,587,000	\$486,000	\$361,000	\$123,000	\$1,656,000
Net Operating Cost	\$1,293,000	\$2,083,000	\$1,845,000	\$1,073,000	\$1,379,000	\$1,109,000	\$1,281,000	\$1,018,000	\$2,017,000
Net Operating Cost per Rider (2002 \$)	\$0.50	\$0.62	\$0.43	\$0.86	\$0.41	\$0.99	\$1.45	\$2.39	\$0.54
Travel Time Savings (2002 \$)	0	0	0	0	0	0	0	0	0
Travel Time Savings	0	0	0	0	0	0	0	0	0
Households Served (2025)	47,000	42,000	30,000	35,000	44,000	36,000	18,000	52,000	37,000
Accessible Employment (2025)	69,000	91,000	65,000	53,000	117,000	26,000	57,000	147,000	103,000
Supportive land use patterns	Medium to high	Medium	High	Medium to high	Medium to high	Low to medium	Low to medium	Medium to high	Medium to high
Concentration of commuter travel	Medium to high	High	High	Medium to high	High	Low	Medium	Medium to high	High
Likelihood of major environmental constraints	None	None	None	None	None	None	None	None	None
Disruption of neighborhood	None	None	None	None	None	None	None	None	None

Source: Las Vegas Valley Transit System Development Plan (Parsons, 2002)

Table 13: Comparison of Enhanced Bus Service

TRANSIT CHARACTERISTICS	SAHARA	BOULDER	MARYLAND	BELTWAY	DESERT INN (1)	DESERT INN (2)	FLAMINGO	RAINBOW	RANCHO	SUMMERLIN	TROPICANA
Route Miles	15.3	15.6	7.1	45	20.7	20.7	12.8	11.5	10.0	40	12.8
Mixed Traffic	15.3	15.6	7.1	45	20.7	20.7	12.8	11.5	10.0	40	12.8
Exclusive:											
At-Grade	0	0	0	0	0	0	0	0	0	0	0
Above Grade	0	0	0	0	0	0	0	0	0	0	0
Below Grade	0	0	0	0	0	0	0	0	0	0	0
Total Transit Vehicles Including Spares	14	13	11	7	11	17	12	8	11	20	14
2025 Annual Ridership	3,002,000	3,515,000	4,277,000	404,000	2,806,000	3,086,000	3,669,000	1,225,000	1,027,000	1,847,000	3,958,000
Increase in Ridership	15.0%	4.5%	0.0%	New Service	126.1%	148.7%	9.5%	9.1%	16.4%	333.8%	6.6%
Capital Cost (2002 \$)	\$18,640,000	\$11,980,000	\$10,740,000	\$3,220,000	\$10,320,000	\$28,480,000	\$15,720,000	\$12,880,000	\$13,060,000	\$9,200,000	\$16,840,000
Annualized Capital Cost (2002 \$)	\$1,958,000	\$1,317,000	\$1,171,000	\$406,000	\$1,132,000	\$2,927,000	\$1,654,000	\$1,328,000	\$1,390,000	\$1,159,000	\$1,789,000
Annualized Capital Cost per Rider (2002 \$)	\$0.65	\$0.38	\$0.27	\$1.00	\$0.40	\$0.95	\$0.19	\$1.09	\$1.35	\$0.63	\$0.45
Annual Operating Cost (2002 \$)	\$4,764,000	\$4,247,000	\$3,274,000	\$2,283,000	\$2,926,000	\$4,551,000	\$4,237,000	\$2,233,000	\$3,480,000	\$6,468,000	\$3,983,000
Annual Fare Revenue (2002 \$)	\$1,253,000	\$1,357,000	\$1,429,000	\$117,000	\$1,247,000	\$1,372,000	\$1,738,000	\$530,000	\$421,000	\$1,876,000	\$1,765,000
Net Operating Cost	\$3,511,000	\$2,390,000	\$1,845,000	\$2,166,000	\$1,679,000	\$3,179,000	\$2,499,000	\$1,703,000	\$3,059,000	\$4,593,000	\$2,218,000
Net Operating Cost per Rider (2002 \$)	\$1.17	\$0.82	\$0.43	\$5.36	\$0.60	\$1.03	\$0.68	\$1.39	\$2.98	\$2.49	\$0.56
Travel Time Savings (2002 \$)	\$3,190,000	\$1,245,000	0	New Service	0	\$2,186,000	\$1,299,000	\$867,000	\$1,091,000	\$4,968,000	\$1,379,000
Travel Time Savings	375,000	146,000	0	New Service	0	257,000	153,000	102,000	128,000	585,000	162,000
Households Served (2025)	47,000	42,000	30,000	81,000	61,000	61,000	49,000	36,000	18,000	75,000	37,000
Accessible Employment (2025)	69,000	91,000	65,000	145,000	96,000	96,000	118,000	26,000	57,000	159,000	103,000
Supportive land use patterns	Medium to high	Medium	High	Low to medium	Medium to high	Medium to high	Medium to high	Low to medium	Low to medium	Medium to high	Medium to high
Concentration of commuter travel	Medium to high	High	High	Low	Medium to high	Medium to high	High	Low	Medium	Medium to high	High
Likelihood of major environmental constraints	None	None	None	None	None	None	None	None	None	None	None
Disruption of neighborhood	None	None	None	None	None	None	None	None	None	None	None

Source: Las Vegas Valley Transit System Development Plan (Parsons, 2002)



Table 14: Comparison of Bus Rapid Transit Service

TRANSIT CHARACTERISTICS	SAHARA	BOULDER	MARYLAND	HENDERSON BRANCH	DESERT INN	FLAMINGO	RANCHO	TROPICANA
Route Miles	16.7	15.6*	7.1	11.1	20.7	12.8	10.0	12.8
Mixed Traffic	2.0	2.0	7.1	0.4	4.4	5.7	5.5	12.8
Exclusive:								
At-Grade	14.7	5.2	0	10.7	9.2	7.1	4.5	0
Above Grade	0	0	0	0	0	0	0	0
Below Grade	0	0	0	0	0	0	0	0
Total Transit Vehicles Including Spares	18	15	11	3	20	15	11	22
2025 Annual Ridership	3,726,000	3,639,000	4,491,000	1,125,000	3,844,000	4,409,000	1,294,000	4,597,000
Increase in Ridership	42.8%	8.2%	5.0%	New Service	209.7%	31.6%	46.7%	23.8%
Capital Cost (2002 \$)	\$101,315,000	\$118,767,000	\$51,117,000	\$183,459,000	\$101,632,000	\$83,489,000	\$74,801,000	\$88,849,000
Annualized Capital Cost (2002 \$)	\$9,237,000	\$10,653,000	\$4,878,000	\$15,596,000	\$9,222,000	\$7,606,000	\$6,807,000	\$8,620,000
Annualized Capital Cost per Rider (2002 \$)	\$2.48	\$2.93	\$1.09	\$13.87	\$2.40	\$1.73	\$5.26	\$1.88
Annual Operating Cost (2002 \$)	\$6,540,000	\$4,633,000	\$3,274,000	\$773,000	\$5,201,000	\$5,084,000	\$3,480,000	\$5,975,000
Annual Fare Revenue (2002 \$)	\$1,555,000	\$1,405,000	\$1,500,000	\$450,000	\$1,708,000	\$2,089,000	\$530,000	\$2,050,000
Net Operating Cost	\$4,985,000	\$3,228,000	\$1,774,000	\$323,000	\$3,493,000	\$2,995,000	\$2,950,000	\$3,925,000
Net Operating Cost per Rider (2002 \$)	\$1.34	\$0.89	\$0.40	\$0.29	\$0.91	\$0.68	\$2.28	\$0.85
Travel Time Savings (2002 \$)	\$9,397,000	\$3,866,000	\$1,909,000	New Service	\$7,648,000	\$8,167,000	\$3,337,000	\$4,802,000
Travel Time Savings	1,105,000	455,000	225,000	New Service	890,000	961,000	393,000	565,000
Households Served (2025)	54,000	42,000	30,000	22,000	61,000	49,000	18,000	37,000
Accessible Employment (2025)	71,000	91,000	65,000	35,000	96,000	118,000	57,000	103,000
Supportive land use patterns	Medium to high	Medium	High	Medium to high	Medium to high	Medium to high	Low to medium	Medium to high
Concentration of commuter travel	Medium to high	High	High	Medium to high	Medium to high	High	Medium	High
Likelihood of major environmental constraints	high	High	High	high	high	High	None	None
Disruption of neighborhood	Apparent Little	Apparent Little	Apparent Little	Apparent Little	Apparent Little	Apparent Little	Apparent Little	Apparent Little
	anticipated	anticipated	anticipated	anticipated	anticipated	anticipated	anticipated	anticipated

Source: Las Vegas Valley Transit System Development Plan (Parsons, 2002)

Table 15: Comparison of Light Rail Transit Service

TRANSIT CHARACTERISTICS	SAHARA	BOULDER	HENDERSON BRANCH	FLAMINGO	TROPICANA
Route Miles	16.7*	15.6*	11.1	12.8	12.8
Mixed Traffic	0	2.0	0	3.0	12.8
Exclusive:					
At-Grade	10.9	5.2	11.1	7.1	0
Above Grade	2.0	0	0	2.7	0
Below Grade	0	0	0	0	0
Total Transit Vehicles Including Spares	27	24	3	26	22
2025 Annual Ridership	4,028,000	3,722,000	1,222,000	4,980,000	4,675,000
Increase in Ridership	54.3%	10.6%	New Service	48.6%	25.9%
Capital Cost (2002 \$)	\$659,204,000	\$321,626,000	\$69,034,000	\$713,761,000	\$475,460,000
Annualized Capital Cost (2002 \$)	\$52,183,000	\$25,739,000	\$5,328,000	\$56,414,000	\$37,571,000
Annualized Capital Cost per Rider (2002 \$)	\$12.96	\$6.92	\$4.36	\$11.33	\$8.04
Annual Operating Cost (2002 \$)	\$9,855,000	\$7,722,000	\$1,546,000	\$8,897,000	\$11,949,000
Annual Fare Revenue (2002 \$)	\$1,681,000	\$1,437,000	\$489,000	\$2,359,000	\$2,085,000
Net Operating Cost	\$8,174,000	\$6,285,000	\$1,058,000	\$6,538,000	\$9,865,000
Net Operating Cost per Rider (2002 \$)	\$2.03	\$1.69	\$0.87	\$1.31	\$2.11
Travel Time Savings (2002 \$)	\$11,656,000	\$5,537,000	New Service	\$12,517,000	\$4,884,000
Travel Time Savings	1,371,000	651,000	New Service	1,472,550	575,000
Households Served (2025)	54,000	42,000	22,000	49,000	37,000
Accessible Employment (2025)	71,000	91,000	35,000	118,000	103,000
Supportive land use patterns	Medium to high	Medium	Medium to high	Medium to high	Medium to high
Concentration of commuter travel	Medium to high	High	Medium to high	High	High
Likelihood of major environmental constraints	None Apparent	None Apparent	None Apparent	None Apparent	None Apparent
Disruption of neighborhood	Little anticipated	Little anticipated	Little anticipated	Little anticipated	Little anticipated

Source: Las Vegas Valley Transit System Development Plan (Parsons, 2002)



Table 16: Comparison of Automated Guideway Transit Service

TRANSIT CHARACTERISTICS	SAHARA	MARYLAND	FLAMINGO	TROPICANA
Route Miles	16.7*	7.1*	12.8	12.8
Mixed Traffic Exclusive:	0	0	0	0
At-Grade	0	0	0	0
Above Grade	12.9	5.6	12.8	12.8
Below Grade	0	0	0	0
Total Transit Vehicles Including Spares	21	27	20	21
2025 Annual Ridership	3,824,000	8,752,000	4,622,000	4,865,000
Increase in Ridership	46.5%	104.6%	38.0%	31.0%
Capital Cost (2002 \$)	\$1,195,641,000	\$518,859,000	\$1,210,323,000	\$1,210,783,000
Annualized Capital Cost (2002 \$)	\$93,961,000	\$41,105,000	\$95,091,000	\$95,149,000
Annualized Capital Cost per Rider (2002 \$)	\$24.57	\$4.70	\$20.57	\$19.56
Annual Operating Cost (2002 \$)	\$7,940,000	\$5,071,000	\$7,203,000	\$7,076,000
Annual Fare Revenue (2002 \$)	\$1,596,000	\$2,923,000	\$2,190,000	\$2,169,000
Net Operating Cost	\$6,344,000	\$2,147,000	\$5,013,000	\$4,906,000
Net Operating Cost per Rider (2002 \$)	\$1.66	\$0.25	\$1.08	\$1.01
Travel Time Savings (2002 \$)	\$10,052,000	\$23,557,000	\$10,069,000	\$7,547,000
Travel Time Savings	1,183,000	2,771,000	1,185,000	888,000
Households Served (2025)	54,000	30,000	49,000	37,000
Accessible Employment (2025)	71,000	108,000	118,000	103,000
Supportive land use patterns	Medium to high	High	Medium to high	Medium to high
Concentration of commuter travel	Medium to high	High	High	High
Likelihood of major environmental constraints	None Apparent	None Apparent	None Apparent	None Apparent
Disruption of neighborhood	Little anticipated	Little anticipated	Little anticipated	Little anticipated

Source: Las Vegas Valley Transit System Development Plan (Parsons, 2002)

REFERENCES

- 1 City of Las Vegas Strategic Plan Priorities, December 21, 2005
- 2 Regional Transportation Commission of Southern Nevada (RTC) Annual Report, 2005
- 3 Clark County Advisory Question 10: 2002 Fair Share Transportation Funding Program
- 4 Regional Transportation Plan FY 2006-2030 (RTC, October 2006)
- 5 Southern Nevada Regional Policy Plan, p 3
- 6 Title 19, Chapter 19.18
- 7 Las Vegas General Plan, Chapter V, Section 5.2, 1992.
- 8 Traffic Congestion and Reliability: Linking Solutions to Problems (U.S. Department of Transportation-Federal Highway Administration, November 10, 2005)
- 9 Journey to Work Trends in the United States and its Metropolitan Areas 1960-2000 (US Department of Transportation; Federal Highway Administration, Office of Planning)
- 10 Regional Transportation Commission of Southern Nevada (RTC) website, 2007
- 11 Ibid
- 12 Ibid
- 13 Ibid
- 14 Ibid
- 15 Ibid
- 16 Ibid
- 17 Las Vegas Monorail website, 2007 (www.lvmonorail.com)
- 18 Ibid
- 19 Ibid
- 20 Las Vegas Strip Trolley Extends Route Downtown (Las Vegas Insider, 2007)
- 21 Las Vegas Strip Trolley, 2005
- 22 South Strip transfer Terminal (RTC, 2007)
- 23 Central City Intermodal Transportation Terminal (CCITT) Draft Environmental Assessment, August 15, 2006
- 24 Regional Transportation Plan FY 2006-2030
- 25 Ibid
- 26 Transportation Improvement Program (TIP) FY 2007-2010 (RTC, April 2007)
- 27 Ibid
- 28 Future Vision: Transit System Map; Transportation Improvement Program (TIP) FY 2007-2010
- 29 Transportation Improvement Program FY 2007-2010 (RTC, April 2007)
- 30 Ibid
- 31 Ibid
- 32 Ibid
- 33 Ibid

- 34 Las Vegas Valley Transit System Development Plan (Parsons, 2002)
- 35 Regional Transportation Plan (RTP) FY 2006-2030
- 36 Las Vegas Valley Transit System Development Plan (Parsons, 2002)
- 37 Sahara Ave. Corridor Rapid Transit Study Alternative Analysis Report (The Louis Berger Group, March 2007)
- 38 Ibid
- 39 Ibid
- 40 Ibid
- 41 Regional Fixed Guideway; Regional Transportation Commission website
- 42 California-Nevada Super Speed Train Commission (June 1, 2005)
- 43 Clark County Comprehensive Planning Website (June 26, 2007)
- 44 Ibid
- 45 Ibid
- 46 Las Vegas Valley Transit System Development Plan (Parsons, 2002)
- 47 Ibid
- 48 Mass Transit- Bus Rapid Transit Shows Promise(United States General Accounting Office, September, 2001)
- 49 Mass Transit- Bus Rapid Transit Shows Promise(United States General Accounting Office, September, 2001)
- 50 Ibid
- 51 Ibid
- 52 "This is Light Rail Transit" (Transportation Research Board, November 2000)
- 53 Regional Transportation Plan FY 2006-2030 (RTC, October 2006)
- 54 Bus Stop Location Summary; Regional Transportation Commission (April 30, 2007)

